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Computer Weekly
Thursday, March 12, 1981

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Govt shortlist for purchase of micros

by Rory Johnston

A SHORTLIST of nine companies has been drawn up by the Central Computers and Telecommunications Agency for all purchases of microcomputers, for use in government departments from now on. Of the nine, only three manufacture their machines in Britain.

The shortlist is intended to promote standardisation and save the effort involved in sifting through tenders from the 250 firms currently supplying microcomputers.

Departments will be free to make their choice from three suppliers in each of three groups, covering machines in the price ranges up to £2,500, up to £6,000, and over £6,000. "Departments would have to have a jolly good case" to buy from a firm outside the nine, said Gerald Watson, head of CCTA.

In the first group the firms are: Research Machines, Microsense, and Commodore; in the second Casu Electronics, Modata and Thame; and in the third BMG, Equinox and Wilkes Computing. Of these, Research Machines, Casu and BMG actually make their machines in the UK; the rest import from the US.

Contracts have been taken out with these firms giving the government substantial discounts and laying down delivery and maintenance arrangements. No quantities are specified; the government simply has the right to buy on these terms when it chooses.

All the machines on the list support Microcobol from Microsoft and CIS Cobol from Microfocus, to help standardisation further. The CCTA will try to get departments to share applications software and buy existing packages where possible. A small "software house" is being set up in Norwich for work that has to be done bespoke.

Of all the UK suppliers, 180 applied for the contracts. The CCTA was, however, disappointed by the poor response of suppliers at the cheap end of the range. Such machines as the Acorn, just chosen by the BBC, were not powerful enough for these practical applications. One notable name missing from the final list, Tandy, did not apply because, says managing director James Nichols, "We didn't know about it."

The contracts will be reviewed in 12 months' time.

This is the first time government computers have been purchased in this way. Watson said that potentially, word processors could be bought in the same way. The factors taken into account in making the choice included facilities, existing software, stability of the company, and support centres.

Acceptance and training packages are being put together by the CCTA and departmental training officers.

Bubble bursts

ROCKWELL International in the US has dropped out of the bubble memory device business after spending an estimated $15 million on development over the last few years.

Amdahl . . . "Acsys now has practically enough money."

CII-HB sinks $10m in Gene Amdahl's fledgling company

by Keith Jones

GENE Amdahl has raised an estimated $10 million worth of capital for his new firm, Acsys, from CII-Honeywell Bull, giving the French-based mainframe supplier a significant minority share in the recently established manufacturer of large-scale IBM compatible processors.

Gene Amdahl told Computer Weekly that he was not actively pursuing any other sources of funds in Europe and he did not wish to enlarge on abortive talks with the Japanese company, Mitsubishi, about funding for Acsys. He said that Acsys now had "practically enough money".

Under the deal between Acsys and CII-HB, the latter has acquired the rights to the VLSI logic circuitry being developed by Acsys and Honeywell Information Systems will also be able to use it. But a Honeywell Information Systems spokesman in Minneapolis said that it was highly unlikely that the deal would lead to HIS selling Acsys processors when they became available.

A CII-HB spokesman in Paris also stressed that his company had no intention of selling Acsys machines in Europe or of developing its own family of IBM compatible processors.

Acsys and CII-HB agreed not to divulge either the amount of money involved in the deal or the percentage share taken in Acsys by CII-HB. But the CII-HB spokesman said that reports putting the figure at $10 million were not far off the mark. He said that CII-HB planned to incorporate the Acsys semiconductor technology in its next generation of machines.

A link-up between Acsys and Mitsubishi would have paralleled to some extent the relationship between Amdahl Corp, which was set up by Gene Amdahl about ten years ago, and Fujitsu.

Mitsubishi's plans to develop a family of IBM compatible machines and its work on 5,000-gate ECL chips were discussed in Computer Weekly on December 4. But the computer side of Mitsubishi is far smaller than Fujitsu and there are no plans to bring the IBM compatible machines with a power rating above eight mips.

IBM watcher Bob Fertig, of Advanced Computer Techniques in New York, commented on the prospects for the proposed Acsys machine: "They're talking about 1985. That's too late to be compatible with H series architecture."

Local govt privacy test case

THE thorny question of whether individuals should have access to files about them in social service departments is being brought to a head by a case in Liverpool in which a man is suing to see his file, claiming that action by officials may have harmed his chance of employment.

This had led Graham Lythe, head of social services at Gateshead, to call for rapid legislation to impose a standard of data protection practice on local authorities.

Lythe has been taking part in a joint working party of the Associations of Local Authorities that is discussing draft codes for various sectors of local government computing. When complete, these codes could be implemented voluntarily by councils in the absence of legislation.

NEWS BRIEF

Systime cash

ONE-THIRD of Leeds-based Systime has been bought by Ivory and Sime, the Edinburgh-based investment management firm which specialises in high technology companies. The price was £6.51 million. The purchase has been made without the NEB selling off any of its 29.5% shareholding in the company.

Fork-lift UK first

GLASGOW based fork-lift truck manufacturer Heister has installed what is believed to be the first IBM 4331 Group 2 mainframe in the UK.

3033S extended

AS part of what IBM calls "its continued commitment to the 303X range" the company has announced the option of six extra channels on the 3033S. The existing maximum is six.

NCC joins in call to limit Telecom power

by Donald Kennett

THE National Computing Centre has joined the call to limit British Telecom's monopoly to maintaining the network itself, although it accepts the "first instrument" policy for residential, speech-only users in the medium term.

This was one of the views from 146 member organisations, most of which use data communications, which the NCC last week submitted to the Industry Secretary Sir Keith Joseph. It also strongly recommended that the licensing of attachments to the network be controlled by independent bodies.

Other recommendations included freedom to offer value added services and to choose maintenance contractors for PABXs.

British Telecom's finances got a temporary fillip last week when Sir Keith announced a £140 million extension to its borrowing limits – to bridge the gap until the end of the financial year (this month). A satisfactory formula has still to be worked out to provide large-scale funding for modernisation and expansion without price increases.

State computers stopped

● From front page

to which many companies are entitled.

The unions are urging companies not to pay VAT which they know is due, but to put it in a deposit account at a building society instead. They point out the absence of any effective record-keeping might mean that any organisation which pays voluntarily might be asked to pay again.

The government receives about £350 million in VAT payments a week, and pays out about £100 million a week.

The DHSS installation at Newcastle holds records of National Insurance contributions, and as such is one of the biggest computerised record-keeping systems in the world, containing records relating to 45 million people.

Stopping the system will mean that claims for benefit will have to be assessed without reference to these records, leading to overpayments which in many cases will be impossible to recover, to underpayments which will cause hardship, and possibly to fraudulent duplicate claims which will be impossible to detect.

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Revenue grinds to a halt

by Nicholas Enticknap

THE Council of Civil Service Unions is claiming complete success for its first week of industrial action, designed to hit the government in the administration of vital day-to-day business.

Computer systems used for processing National Insurance payments and for certain Naval administrative procedures have been shut down from last Monday, and installations used for processing income tax records have been affected since Friday.

One small victory for the government is that the VAT installation at Southend has not been shut down. According to a spokesman for the Customs and Excise, "The fight has seen some industrial action, but the net effect is that the computer is still working."

However, according to a spokesman for the unions, SCPS official Dave Hall, "The computer is still running but nothing is going into it. The key people are the DP operators who feed the computer, and they are all out".

Hall told Computer Weekly that no VAT payments were being banked. He also outlined the effect of stopping the flow of data to the system: "Because no data is being updated to the computer, the government can't chase people who are not paying".

The DHSS installation at Newcastle-on-Tyne, which records National Insurance contributions, and which is referred to by local employment offices when evaluating claims for any welfare state benefits other than supplementary benefit, has been shut completely.

Apart from disruption to the work of the Department of Employment and of the DHSS, the industrial action will also severely delay the planned conversion from ICL 1906A to ICL 2982 equipment, scheduled to take place next month.

The main significance of the strike by staff at the two Inland Revenue centres at Shipley, West Yorkshire and Cumbernauld, near Glasgow, is that cheques arriving at these centres will not be banked, so aggravating the squeeze on cash flow that has been started by the action at Southend.

The two centres between them receive about £2 billion in income and corporation tax, plus £1 billion in National Insurance payments per month.

To mitigate the effect of this action, the Inland Revenue has sent out a circular letter to all large employers, reminding them that they have an alternative tax payment procedure. Instead of sending cheques direct to Shipley or Cumbernauld, they can pay by Giro or National Giro.

The action of these companies is particularly crucial to the effectiveness of the unions' action, as their payments account for the bulk of the £3 billion per month receipts. The normal procedure is that these organisations pay on the 19th of each month. As a result, the reaction of large organisations to the Inland Revenue's letter this week will play a large part in determining the success or failure of the action.

A stormy meeting of Infotech creditors last week saw two separate liquidators appointed: Richard Floyd (left) and Solomon Cohen. Full story page 3.

Maintenance war after sale of Scope Data

A BATTLE for the £200,000-plus maintenance market for Flexowriters and Computypers has broken out following the collapse of Sheffield-based Scope Data Systems. The market is currently in a state of uncertainty with three separate companies bidding to pick up the lion's share of the business held by Scope.

Flexowriters and Computypers were originally developed by California-based Friden and are aimed at the automatic letter writing market, tape preparation for numerical control, and for use as word processors and as general business machines.

There are about 3,000 in the UK with a market in new sales of over 100 a year. The three companies seeking to maintain them are Scope itself, now owned by London-based Officegate which is in turn owned by the American Ira Gale, Radius Computer Services of Hull, and Computron Business Machines of Kingston-upon-Thames.

Officegate bought Scope from the receiver after the Sheffield company's principal banker, Williams & Glyns, had recalled a £200,000 debenture and put it into receivership with the loss of 70 jobs at the end of February. The price paid was £25,000 for the assets and goodwill of Scope. But this deal pipped an offer from Radius which had thought it was to take over Scope after offering, it says, £15,000.

Gale, who says he was in on the bidding at an early stage, is now trying to keep the market held by Scope. Though he has acquired the company's assets, the maintenance agreements on Flexowriters and Computypers held by Scope lapsed on its liquidation, according to receivers Peat, Marwick, Mitchell. These agreements actually appeared on Scope's books as debts, since they were paid for a year in advance, and a substantial amount is outstanding on agreements which have still some time to run.

Both Gale and Radius have approached the manufacturer, of the

● Turn to back page

NEWS BRIEF

Union threat to banks

INDUSTRIAL action to halt computers is threatening to spread from the public sector to the private, with plans being drawn up by the Banking, Insurance and Finance Union to picket three computer centres in London, Wythenshawe and Gloucester in support of a pay claim by clerical staff.

Computer operators' pay negotiations have been suspended until a national deal has been struck with the clerks but the union is relying on computer staff members not to cross the clerks' picket lines.

Chinese order

ZILOG has signed an agreement with the Chinese under which it will supply up to $5 million worth of Z80-based microcomputer systems to the Peking Automation Technology Research Institute. Applications will include airline and hotel reservations as well as educational work at universities.

DoI soundings

OFFICE system suppliers are discussing with the Department of Industry alternatives for experimental automation in eight possible sites within separate government departments. Firms will be asked to submit proposals when it has been decided which applications show promise.

Standard

THE prospect of a European standard for viewdata was brought closer this week following discussions between British, French and German telecommunications officials. The latest round of discussions was initiated by the French who are shortly to provide 30 million phone users with viewdata terminals for directory enquiries.

Big US leasing firm files for bankruptcy

by Keith Jones

IN the wake of the controversy surrounding so-called "flexible" leasing, one of the biggest independent US lessors, OPM Leasing, has filed for bankruptcy under Chapter 11 of the US bankruptcy laws.

OPM's liabilities of more than $500 million exceed its assets by more than $50 million as a result of too many lessees invoking early termination clauses in their leases.

At the same time, OPM is the subject of several private lawsuits from organisations that loaned money on leases written by the bankrupt firm.

Allegations surround leases apparently issued in the name of Rockwell International. Rockwell is one of the impressive line-up of multinational corporations that have done business worth up to $1 billion with OPM over the last seven or eight years.

Many of the deals signed by OPM were so-called indemnity leases where the lessee was offered the possibility of being able to terminate the lease before the full term, with OPM paying off the remainder of the financial commitment. If OPM goes out of business such termination will not be possible.

Lessees picked up by OPM in the UK since it set up shop here about two years ago include Lucas, ICI and Dunlop. Multinational clients include Corning Glass, American Express, Rockwell, General Motors, Prudential Assurance and Lockheed.

The European side of the company, which includes subsidiaries in France and West Germany as well as the UK, was still operating at the time of Computer Weekly going to press and under Chapter 11 the US firm can continue trading albeit under the supervision of a court. The firm is owned jointly by its two principals, Mordecai Weissman and Myron Goodman, through a holding company called Cali Trading International.

Goodman, who was executive vice-president of the company, has now resigned and has been replaced by a former US assistant attorney, Philip Ryan, who will act as the firm's manager of operations and its special attorney. Ryan indicated that his first priority was to review the company's operations.

On the company's financial position Mordecai Weissman commented that the company was not in a position to meet its current obligations as they came due even though it believed it had substantial assets.

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TURN QUAY SYSTEM

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Shopping with magnetic card in France

by Jack Gee

FRANCE'S Crédit Agricole, the biggest banking group in the world, has announced it is embarking on the first nationwide network in France of point of sale terminals in shops and other retail outlets.

Crédit Agricole intends to install 30,000 online terminals over the next five years. The £16 million contract could go to any of 70 manufacturers of terminals in France, Germany and Belgium who have been invited to present tenders. The French bank has not approached British makers.

Crédit Agricole's ambitious venture follows a pilot experiment which it has been conducting since July 1980 with the Euromarché firm's hypermarket in Limoges, where NCR equipment was tested.

The payment operation is based on a magnetic card which the shopper presents at the cash desk, where it is fed into the point of sale terminal. The bank's central computer at once flashes a series of figures on the terminal's display screen to indicate whether the shopper's account is in credit.

The shopper then taps out his own code number – not his account number – on a pin pad which resembles a pocket calculator and is shielded so that not even the cashier can read the secret figures.

The terminal produces a voucher giving the amount paid, the number of the customer's account and date. This serves as a record of the operation for both the shop and customer. The central computer can debit the shopper's account and credits the stores in real time. But customers are allowed the sale delays for transfers of funds as with a cheque guarantee card.

Jean-Paul Granday, data processing manager for Crédit Agricole in the Limoges area, says: "This type of banking operation is easier, faster and less prone to error." Euromarché staff at the 24 cash desks quickly got used to the system. Average payment time was under 30 seconds, compared with over three times as long for cash and five times more for writing out a cheque (and each cheque costs 50p to process).

According to a recent study by France's Centre for Economic Research on Savings 85% of people who have used the magnetic shopping system approve and want to see it extended.

Before seeking NCR's co-operation for its Limoges experiment, Crédit Agricole examined the merits of an offline card with its own microprocessor memory which could be loaded with cash and then gradually discharged at each point of sale.

Other magnetic card trials are being conducted by banks at Ecully, near Lyon, and around Bourg-en-Bresse, a poultry producing area midway between Lyon and Geneva where the Banque Régional de l'Ain, a private banking firm, launched its experiment early in 1979.

The Banque Régionale de l'Ain has installed 125 terminals in shops and filling stations and issued 36,000 magnetic cards, but Serge Brevet, head of the bank's data processing department, admits that only one customer in three uses the card.

Rivalling the online cards which Crédit Agricole and Banque Regionale de L'Ain have developed in partnership with NCR and IBM, the French firm Innovatron has been pushing its offline card.

But a project to launch the Innovatron card in association with French banking members of the Visa-affiliated Blue Card system fell through when the State-owned Société Générale de Banque refused to join.

Innovatron has sold a 23% stake in its capital to the Franco-US firm Schlumberger. Schlumberger has gone into partnership with CII-Honeywell Bull and Siemens to press ahead with this project.

The Banque de France, the French State bank, is looking closely at both offline and online systems and has set up a special committee for this task. A group of ten banks has set up a non-profit making trade group with the French PTT to study offline cards and is now awaiting tenders from Honeywell Bull, Schlumberger and Philips.

A small-scale test of offline cards has already begun in Lyon and others are scheduled for middle-sized French towns later this year.

Crédit Agricole, sponsoring the most ambitious point of sale terminal project launched to date, is waiting for other banks to follow its example. Assistant general manager Bruno de Maulde told a convention on payment methods held at Monte Carlo: "It can only be a real success if all banks co-operate."

A customer pays at the Euromarché hypermarket in Limoges, site of the pilot project for Crédit Agricole's national network of online PoS terminals at retail outlets.

NCR aims at wages by cash dispenser

by Keith Jones

THE payment of factory wa[ges] by cash dispenser is seen by [NCR] as a major new source of sa[les for] its 1780 automatic teller ma[chine]. This is the unit already bein[g used] as a cash dispenser by clea[ring] banks all over the UK.

NCR has been experimen[ting] with the 1780 on the shop floo[r of] its Dundee factory where [the] machine was developed. The [company] says that two major manufa[cturing] companies are now on the p[oint of] signing orders for the 1780 [with] the intention of using it to [pay] employees who now receive [their] wages in cash in a pay packet.

The main problems to [be] overcome are objections and [anxie]ties on the part of unions.

NCR points out that the pro[por]tion of employees in the UK [who are] paid in cash rather than throug[h a] bank account is far higher tha[n in] most other industrial countri[es –] 50% compared with 5% in We[st] Germany, 2% in France and o[nly] 1% in the US. It costs about £[...] service a year's cash payme[nts] according to NCR.

Initially the 1780s on fac[tory] floors will operate in offli[ne] mode, being used to dispe[nse] whole or part payments of [wages] and to record the informatio[n on] cassette. Each employee using [the] machines will be issued with [a] magnetic stripe plastic card simi[lar] to the cards used by bank accou[nt] holders.

Budget not so bad for payroll programmers

by Cliff Dilloway

NO CHANGE in personal income tax allowances and a postponement of procedural amendments originally promised for next year, mean that the Budget last week is likely to have less of an impact than normal on the workload of payroll programmers.

PAYE rates are unaltered, and along with them the tax bands set for automatic deductions from employees' pay slips. Chancellor of the Exchequer Sir Geoffrey Howe also told Parliament that procedural changes announced in his Budget last April for enaction by April 1982 have been shelved – "in part because of pressures on civil service staff numbers."

Previous proposals on an employer's statutory sick pay scheme have been withdrawn and a new Bill is promised for the autumn, but this means the scheme is unlikely to start before April 1983.

The Budget does include an intention to tax sick pay received through an insurance scheme, to close a loophole under which employers can save the income tax their employees would otherwise pay on the sick pay they receive.

The Chancellor announced that the value of petrol provided by employers for the private mileage of their employees is to be taxed. The intention is to apply the tax from April 1982, although last year Sir Geoffrey ruled out the same measure because it would "present severe administrative problems both for employers and the Inland Revenue".

Store's satellite link to American Express

by Keith Jones

AN ONLINE satellite link to the American Express credit authorisation centre in Phoenix, Arizona, is one of the improvements in service for credit card users being implemented by the Army and Navy Stores.

The link will be set up later this year, but before then the Army and Navy plans to streamline its dealings with the two main UK based credit card firms by starting to send them transaction claim files on magnetic tape instead of credit card vouchers.

The vouchers will be eliminated and the customer's copy replaced by the Army and Navy's own standard sales slip which will identify the credit card company. Each day the Army and Navy will also receive magnetic tapes containing "hot lists" of stolen or lost cards and the information will be put online to the NCR PoS terminals at the group's nine stores.

The American Express link is being set up by Army and Navy to connect about 350 NCR PoS terminals at its stores via its computer centre in London to the American Express offices in Brighton and from there by satellite to Phoenix.

A technique for speeding up the processing of bank cheques at store checkouts has been adopted by the RNI hypermarket at Beauvais in France. Its NCR 2[...] PoS terminals are fitted with a third print unit which automatically fills in the payee, date and amount on a blank cheque provided by the customer, who signs it.

ComputerWeekly

Thursday, March 19, 1981
Vol 30 No 749

100,000 circulation – the highest of any computer journal in Britain

IPC Electrical-Electronic Press Ltd, Quadrant House, The Quadrant, Sutton, Surrey SM2 5AS. Telex: 892084 BISPRS

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Terms of circulation control: Computer Weekly is sent free of charge to the following categories in the UK and Eire only: Company directors, company secretaries, management and executives, civil servants responsible for computing, management/computer consultants, lecturers and teachers of manager/supervisors, systems analysts/O&M officers, programmers, operators, computer salesmen and field engineers.
Subscription: UK £18, Students £9; US, Canada $78, Students $39; Europe £30, Students £15; Middle East, North Africa (airmail) £47; South America, Southern Africa, South Asia (airmail) £52; Far East, Australia & New Zealand (airmail) £58.
Circulation Dept IPC Business Press (S&D) Ltd, Oakfield House, Perrymount Road, Haywards Heath, Sussex. Tel: 0444 59188.

BRANCH OFFICES
Birmingham: Lyndon House, 202 Walsall Road, Birmingham B42 1BA. 021-356 4838
Manchester: Grove House, Skerton Road, Old Trafford, Manchester M16 0WL. 061-872 8861
New York: 205 East 42nd Street, New York, NY 10017. (0101-212) 867 2080

Publishing Director: Dr J A G Thomas. Editorial Director: Chris Hipwell.
Published weekly on Thursday. Registered at the Post Office as a newspaper. ISSN 0010-4787 © IPC Business Press Ltd 1981

'£619,000 in royalties' – Infotech creditors probe

by Paul Fisher

A CLAIM that up to £619,000 has been paid in "royalties" to Swiss and British companies or individuals by Infotech, was made at an acrimonious creditors' meeting in London last week.

The conference and training company, which has been bought by Robert Maxwell's Pergamon Press for £135,000, is in liquidation with debts of £974,298.

Accountant Richard Floyd of Floyd, Nash & Co, who said that his firm had not previously acted for either Infotech or Pergamon prior to being called in by the Infotech board on February 4, attributed the crash to four factors: the economic recession; royalties and commissions paid; the activities of MTS; and a series of disagreements at board level.

Referring briefly to the recession, Floyd mentioned that Infotech's UK turnover had been 55% below budget.

He then spoke of royalties and directed the attention of the 100 or so people at the meeting to a row of figures on an extract from profit and loss accounts. The figures show that, since mid-1976, £619,000 has been listed against "commission payable."

Quite where this sum has disappeared, is shrouded in mystery. Peter Mason, the Floyd, Nash accountant who has been supervising the cessation of trading since February 4, says that the "royalties" were first paid to a firm called BK Wissenshaft, which later changed its name to Infotech AG, based in Switzerland, then after 1978 to Infotech UK Holding Ltd.

Mason says that requests for royalty payments came from three people, Roy Goodman, Clive Wilkins and John Pitman. Goodman founded Infotech, Wilkins was its chairman and Pitman is an accountant. All three are shareholders of Infotech UK Holdings Ltd. So far the only cheques traced back to individuals which have been discovered by Mason show two payments totalling £9,000 requested by Goodman and Wilkins and made payable to Pitman.

The royalty payments were calculated against turnover and took no account of profitability or bad debts. Until 1980 the royalty was between 7% and 10% of turnover after which it was reduced to 2.7% of turnover.

Floyd said: "We feel that thorough investigation should be made about funds transferred abroad."

Floyd drew attention to the contribution that he claimed MTS had made to Infotech's losses. MTS was owned by former Infotech director and current shareholder, John Blake.

Floyd said that MTS had received between £51,000 and £65,000 and he claimed that MTS had "scheduled many more courses than was feasible."

The fourth reason for the demise of Infotech was the lack of stability caused by what Floyd called "internal pressures". Some directors have attributed the upsets to the return of founder Roy Goodman from the US in 1979 after the closure of Infotech International Inc.

A reflection of the dissent amongst Infotech management is apparent in the fact that two liquidators have been appointed to wind up Infotech's affairs. Sitting between Floyd and Mason at the creditors' meeting was Solomon Cohen, the accountant from Pitman and Cohen who worked on Infotech's two previous liquidations in 1970 and 1975. Cohen's appointment was in accordance with the wishes of Goodman and had the support of Blake.

Cohen was formerly in partnership with John Pitman, one of the Infotech UK Holding shareholders.

On February 25, the same day as the shareholders meeting which saw the joint liquidator agreement, came the offer for purchase from Robert Maxwell. The offer was open for acceptance within 12 hours. Mason said that there had been negotiations with 11 bidders which were whittled down to four.

The Pergamon price is twice the value of Infotech's tangible assets.

Former Infotech lecturer, Mike Kerford Byrnes, made an indignant speech about the "lecturers" erosion of trust" in the company and wondered why a claim for a mere £17,000 from CMS, a subcontractor which used to supply lecturers, had precipitated the collapse. He then said that after the collapse he had been approached by a company called Programmer Training, but that he had turned down their offer of lecturing work.

Another ex-lecturer challenged the directors of Programmer Training to stand up. Keith Robinson, ex-Infotech director, and Chris Boon, ex-Infotech managing director and shareholder, said they were involved, explaining they had formed the company in 1980 when Goodman had started reasserting himself in Infotech affairs. Both Boon and Robinson are on the board of Pergamon Infotech.

There are 528 trade and expenses creditors of the liquidated company. Twelve are owed in excess of £10,000, including the Post Office which is owed over £26,000. There are 505 creditors with claims under £5,000 whose total amounts to £300,444.

The creditors' meeting concluded with the acceptance of Floyd and Cohen as joint liquidators and a committee of five creditors was appointed: the Post Office, CMS, the Inland Revenue, a company called Vlasak and, representing some of the smaller creditors, Chris Balderton.

Glum-faced former Infotech directors at the creditors' meeting last week (from left): Keith Robinson and John Guy (directors), Chris Boon (managing director) and Clive Wilkins (chairman).

US disc manufacturer to sell Scots factory

by Keith Jones

A FLOPPY disc drive manufacturing operation with plants at Livingston in Scotland and in the US is up for sale at a price of about $2½ million following a decision by the US-based MFE Corp to concentrate on its magnetic tape and instrumentation products.

According to MFE this move is being made despite a heavy order book and results from the big investment that would have been needed to stay in the floppy disc drive business.

Bill Lahti, managing director of MFE Ltd, said that the parent company might be prepared to sell off the Livingston factory separately from the floppy disc drive manufacturing operation in the US, which is located at the firm's headquarters at Salem, New Hampshire. The Livingston plant was set up in 1978 to exploit the European floppy disc drive market.

According to Lahti it would take another year for the Livingston factory to become completely independent.

He quoted a price of $1½ million for the Livingston operation, including receivables, and said there was no time limit for offers. But he pointed out that the staff at Livingston, nearly 50, would be made redundant on April 17 if no sale was made before then.

The MFE drives are all 8-inch units, including double-sided, double-density models, and Lahti said that about 30,000 drives had been shipped worldwide since MFE started building them about four years ago. But a $6 million investment would have been needed in capital equipment and parts to stay in the business, and this money could not be found with MFE's $24 million turnover and the amount of research and development needed to keep abreast of present developments.

MFE is to continue accepting orders for floppy disc drives for another two months, and to ship for another six months.

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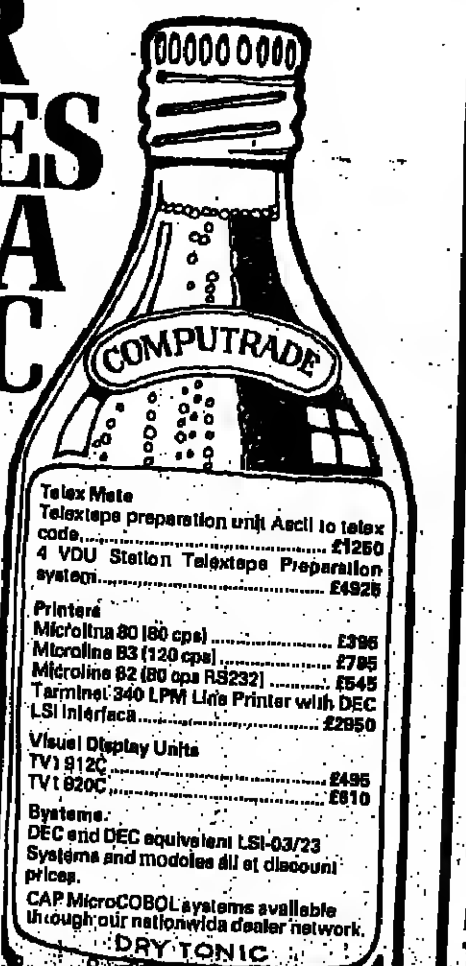

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Net/One to be used in Case local network

by Donald Kennett

CASE is to use Net/One from Ungermann-Bass in the US as the local networking element of its recently announced Casenet networking scheme.

A three-year agreement, under which the Rickmansworth data communications company expects to buy at least £200,000 worth of network modules a year from Ungermann-Bass, was announced last week at a seminar designed to introduce Casenet to some of the company's main customers.

Case sales director Mike Hafferty said he expected the first trial systems to be installed this autumn, probably in the City of London, and further modules of Casenet would be announced next year.

Ungermann-Bass vice-president Charlie Bass said he thought that future networks would implement the ISO open-networking model, although few did currently. Ethernet, on which Net/One was based, did not conform to the model because it was designed before the model was developed. But Net/One did the job of the first four levels and Case would add the functions of the higher levels.

Standards were not very much in evidence in local networking, said Bass. Ethernet was a de facto standard developed by Xerox and endorsed by Intel and Digital Equipment. It had now been adopted by Hewlett-Packard, Nixdorf, Olivetti and Zilog and it was likely to have a significant impact on the market.

The Institute of Electrical and Electronic Engineers, which set many standards in the US, had been working on two alternative strategies for local networking. One, based on contention for channel capacity by the attached devices, was similar to Ethernet and was likely to be ignored because Ethernet already existed as a standard.

The other, based on non-contention or guaranteed delivery, was less well-developed but was likely to have some effect in broadband networking where data was transmitted on a modulated carrier frequency and shared a cable with, for example, television distribution.

The American National Standards Institute and the International Standards Organisation were likely to say something dramatic on local networking in the next year, but had not played their hand yet, Bass said.

Ethernet has its limitations, Bass conceded, and for that reason his company planned to provide alternatives at the lower levels in future. Its strategy had been to separate the transmission medium from the equipment implementing the access technique, so as to allow changes within the life of the product. One office with a baseband network and another with a broadband network should present identical characteristics to their users.

BASS . . . "standards are not much in evidence in local networking."

Inmos aims to win most of fast 16K static RAM market

by Frank Ogden

AFTER last month's ISSCC presentation in New York, Inmos has started to look like the formidable VLSI house which it promised all along to be.

With the provisional specification for the Inmos 64K dynamic RAM showing a real touch of class, the company now states that it can deliver its high performance but expensive 16K static part with 45 nanoseconds access time. Also there is a promise that device sealing from the relatively conservative 2.7 micron features will produce good parts running at 35 nanoseconds maximum access time. This would take the Inmos 16K static device into the speed range of current ECL (emitter-coupled-logic) technology, but without the power penalty.

With the introduction of the IMS1400-45, the company has dropped the price on its standard 55 nanosecond part from $165 to $103 in 100-off quantities. According to marketing director Douglas Rankin a further iteration of the basic 16K static design will lead to a 4K x 4bit word organised memory appearing by the third quarter of this year.

Rankin, based at the Inmos Cheyenne Mountain, Colorado Springs headquarters, estimated that the "fast" 16K static memory market was currently worth about $35 million and that his own company aimed to capture nearly all of it.

"Inmos is currently sampling more than 50 customers with the 16K IMS1400" he said.

As yet the only other company to threaten seriously Inmos' chances in this particular segment of the memory market is Intel with its 2167 16K static RAM. It says that it can deliver volume quantities of the 55 nanosecond device within 12 weeks of ordering but a price more than $30 below Inmos.

Inmos is quick to point out that the step and repeat processing used on the IMS1400 should enable better yields and better development prospects than Intel's two micron scaled HMOS currently being run on conventional projection printers. Inmos claims that, while performance boosting of its process has only just begun, Intel is more or less at the end of the line.

John Heightley, Inmos memory boss, claims that both Intel and Texas Instruments have recognised that step and repeat processing is the right way to go, and that these two companies are rushing to build new front end wafer fabrication plants based on this technology.

Heightley is also looking for a lead in the 64K dynamic RAM market based on technical excellence rather than price. His company is to market the 64K x 1 IMS2600, with volume delivery scheduled for the end of this year, on the basis of a new architecture. To the outside world it looks like a standard 64K part to JEDEC pinout, with no function on pin one.

By ingenious design wrinkles the basic 100 nanosecond part can be made to look like a 16K x 4 memory with a high speed serial output. Memory contents in the four array quadrants can be delivered successively simply by toggling the CAS line at up to 25MHz. Thus two banks of IMS2600 devices can maintain a continuous interleaved data stream of 25Mbits/sec, an equivalent access time of 40 nanoseconds.

Shelton launches Sig/net

by Donald Kennett

HAVING designed the Nascom 1 and 2 personal computers under contract, London-based design consultancy, Shelton Instruments has launched a system called Sig/net under its own name aimed at both the industrial control and small business system markets.

Shelton feels that the 26-wire ribbon-cable interconnection system on which it is based could rival the S-100 bus in its appeal to system builders, claiming that it is cheaper and easier to add extra RAM memory and implement special interfaces.

The first five basic modules will be available from the beginning of next month, either separately or packaged as a desk-top business system running CP/M, with a 4MHz Z80 processor, 64K-bytes of RAM, two 5¼-inch single-sided double-density Tandon floppy disc drives and two V24 serial ports, priced at £1,299.

Tory MP calls for more robots

by Chris Youett

A MIDLAND MP is pressing the government to help industry make more use of robots. Iain Mills (Tory, Meriden) said: "The runaway success of the Mini Metro has shown that Britain must grasp the opportunity of using advanced automation to improve both quality and productivity. The need for government help in developing robots and in installing them is considerable."

Mills asked the Information Technology Minister, Kenneth Baker, in the Commons, what action the government was taking.

Baker said his department provided support for research, use and manufacturer of robots. Government support was now running at about £1.3 million a year.

"In addition, the Science Research Council looks ahead to the next generation of robots with its industrial partnerships programme," Baker said.

Micro is designed for word processing

by Eileen Stalner

A Z80-BASED microcomputer built around the S100 bus is available from Scottish computer company Airamco. Called the Mikro 1000, it is specifically designed to simplify word processing and has a starting price of £3,500.

Housed in a single desk-top module with an external printer, the system consists of 64K of RAM, serial and parallel I/O, a 12-inch video display and a detachable 117-key keyboard. Online storage includes two megabytes on twin 8-inch disc drives.

Mikro 1000 runs the standard CP/M 2.2 operating system which also controls the software designed keys on the keyboard. Over 40 keys have been programmed to match the command structure of the Wordstar word processing package.

NEWS BRIEF

CFM shows the way

COMPUTER maintenance company CFM, the wholly owned subsidiary of IAL, has turned in a healthy £400,000 profit on turnover of £4.75 million for 1980. CFM has 20 regional centres, has expanded rapidly and now claims to be the biggest maintenance UK company.

Derek Royle, chairman and founder of CFM, has retired and his successor is Jack Gentle from the directorship of IAL's product and services division.

ICL success

A MAJOR ICL customer, supermarket group J. Sainsbury has installed a dual 2976 system worth more than £2 million to replace a 2970 installed in 1978 and increase significantly its data processing power. ICL says that the 2976 was delivered within six weeks of the initial order and the configuration includes 12 megabytes of main memory with 20 EDS 200 disc drives.

Selling Solve

"VERY substantial growth" in sales of Systemsolve's Solve applications packages range is behind a £1 million turnover growth for the year to last September, according to managing director John Stanley who has announced income at £2.45 million, and record profits for the Sunbury and Manchester-based systems, software and bureau company. The Solve products include Pensolve and Ledgersolve. Some 20 per cent of Systemsolve's earnings come from overseas.

Prudent move

MOHAWK Data Sciences made savings of about $8 million through lower interest rates in January after a stock offering made to reduce bank debt, says chairman Ralph O'Brien, who noted "a slowing of our order rate in our European subsidiaries during the summer and through October". US computer and communications systems company Mohawk has reported $5 million profits for the third quarter bringing the nine-monthly total to $13.4 million.

Tandy micros to help blind OU students

by Rory Johnston

BLIND students at the Open University should find their work made easier as the result of a research project now being started using voice synthesisers attached to Tandy microcomputers. If the scheme is a success, all 200 of the OU's blind students will have a micro at home which will provide teaching material on a wide range of courses, and even help in deal with the university's administrative paperwork.

Tandy's standard voice synthesiser is being used on three test machines now to see how programs can be converted easily to produce spoken output instead of printout. The blind students have to learn to input with a standard Qwerty keyboard, and one machine function to help this speaks the name of each key as it is depressed.

Eventually it should be possible to use communications links so that the Tandys can act as terminals to the OU's DEC 20 mainframe.

One program already working helps students fill the university registration form, eliciting their choices of courses and warning about conflicts.

Software support plan

by Claire Gooding

SPOTLIGHTING the vendor as the key to keeping the microcomputer marketplace in step with users' needs, Digital Research, originator of the CP/M operating system, has developed its Independent Software Vendor Support Plan.

The ISV plan includes seminars, technical support, licensing and software protection information, newsletters, manuals, magazine articles, and a referral catalogue for customers interested in CP/M compatible products.

Digital Research, which is a heavyweight by reputation if not in actual size, intends the ISV program "not so much to be a profit-making venture but rather to act as a catalyst to the industry itself."

"We have had the opportunity to witness at first hand what these businesses must do to get on their feet," said the company's founder Dr Gary Kildall. "We see the independent vendor as the key to keeping the industry in step with the needs of the computer user, especially in the microcomputer marketplace."

'Market will double by 1985'

HOT on the heels of James Martin's latest publication on programmer-less applications development comes a report from San Jose marketing research firm Strategic Business Services which predicts that the market for tools to improve programming productivity will double by 1985.

The 140-page report, called Programmer productivity: New tools and emerging markets, analyses the options open to users wishing to use programming resources more efficiently and looks at the vendor's side of the business as well.

It costs $1,500.

Indian threat to the UK's lead in software expertise

THE UK's pre-eminence in world software could be seriously undermined by competition from India within five years, MPs were told at the latest meeting of the Parliamentary Information Technology Committee.

Speakers from the floor, mainly representatives of UK software houses, pointed out that India possessed most of the advantages that Britain had in this field, such as high literacy rates, plenty of graduates, and the use of English.

All that had to happen, it was suggested, was for the Indian government to clear away the bureaucracy that was currently holding back developments, particularly problems with accessing networks and online databases overseas. The Indian PTT's efficiency is low, and this needs to be rectified.

Some companies, such as Leeds mini-maker Systime, already have programming operations in India.

The Parliamentary Information Technology Committee was discussing government software procurement, with speakers from the software industry, the unions, and the Civil Service.

Barney Gibbens, of CAP, suggested that since hardware was becoming a smaller part of any contract, software houses should become the prime contractors.

This raised the picture of IBM as a sub-contractor to, say, Scicon, and led one member of the audience to counter with the view that standard packages would again make software a minor part of the cost of a system.

Bob Graham, of the Department of Industry, described the difficulty of quantifying the benefits of computer systems and suggested that a not uncommon productivity improvement of only 10% to 15% meant that taxpayers' money was being wasted on civil servants' toys.

Roy Grantham, general secretary of the white collar union Apex, stressed the importance of software and the need for training, but avoided the vital issue of the attitude of the civil servants' unions to software houses. This delicate question of whether outside contractors should be used in place of Civil Service programmers was skirted around at the meeting.

The UK could have future as an offshore software house for Japan, some people thought, but then Japan would start producing its own software and all Britain would be left with was the job of writing manuals.

GIBBENS . . . . . Software houses should become prime contractors.

12 megabytes of store potential on Apple

by Keith Jones

IN theory up to 12 megabytes of floppy disc storage can be interfaced with an Apple microcomputer using the 8000 series disc subsystem developed by Eicon Research of Cambridge. In practice Eicon plans to promote a two-megabyte version which is considered big enough for running the database packages now available for Apple users.

Apple dealer Eicon is sufficiently confident about the reception for its 8000 system among other Apple dealers and Apple users, that it has placed a £200,000 OEM order with Teleprinter Equipment of Tring for double-sided, double density floppy disc drives built in the US by Decitek of Westboro, Massachusetts. Teleprinter is the Decitek distributor in the UK.

Up to four of the one-megabyte Decitek drives can be supported by the 8000 series controller which was developed by Eicon itself. The two-megabyte version will cost £1,780 to end users. An extra £1300 is charged to bring the capacity up to four megabytes.

The Apple could support up to three of the Eicon controllers, bringing the capacity up to a maximum of 12 megabytes, although in practice the user would probably find it cheaper to go over to an 8-inch hard disc.

Later this year Eicon plans to bring out a version of the 8000 series compatible with the S100 bus on Intel and Zilog-based microcomputers.

Eicon managing director John Hartley said that Decitek floppy disc drives had been selected by Eicon in favour of other makes because of the quietness and accuracy derived from using a linear motor rather than a stepper motor to move the read/write head.

Top-of-range system doubles throughput

COMPUTER TECHNOLOGY has doubled the maximum transaction processing throughput it can offer customers, with the launch of the 8066, a new top-of-the-range system added to the company's 8000 series.

The 8066 can support up to 75 local or remote active terminals per processor and up to 2,000 megabytes of disc storage. At the same time it runs CTL's well proven transaction processing monitor, TAD.

The 8066 takes full advantage of the communications technology announced last year by CTL as ICE, Intelligent Communications Environment. Each 8066 can incorporate up to 64 independent ICE I/O processors, each of which can execute all the protocol software for the lines it controls.

All the software for protocol definition and handling is programmed on the host 8000 series machine in the high level communications oriented language, Class.

Like existing 8000 series machines, the 8066 runs under CTL's Modus operating system and all programs and data can be transferred without any requirement to re-compile.

Vehicle information service

by Chris Youett

A COMPUTERISED vehicle and road information service, based on the Datafreight system set up by British Road Services, has started trials in the West Midlands, the South East and Scotland.

The aim is to fill up empty lorries returning from making deliveries.

The service has been set up by the Road Haulage Association and its staff will handle data via video terminals. It is available only to association members.

An association spokesman said that after a trial period the service would be reviewed. If it was a success, the service would be extended to the remainder of the UK. At present users have to register for the service and pay a fee.

French govt aid for micro clubs

by Jack Gee

THE French Post Office's directorate for telecommunications is playing "Godfather" to microcomputer fans who have set up 87 clubs over the past three years.

The clubs, known as "Microtel", are getting government funds and technical help under the scheme to make the public more aware of microcomputer technology and its uses in their daily life.

In contrast with the US, where micro fans own their equipment and meet to exchange ideas and link their programs, the purpose of the French clubs is to share computers which are still beyond the range of most purses.

Sales of microcomputers in France rose from 15,000 in 1979 to 30,000 in 1980.

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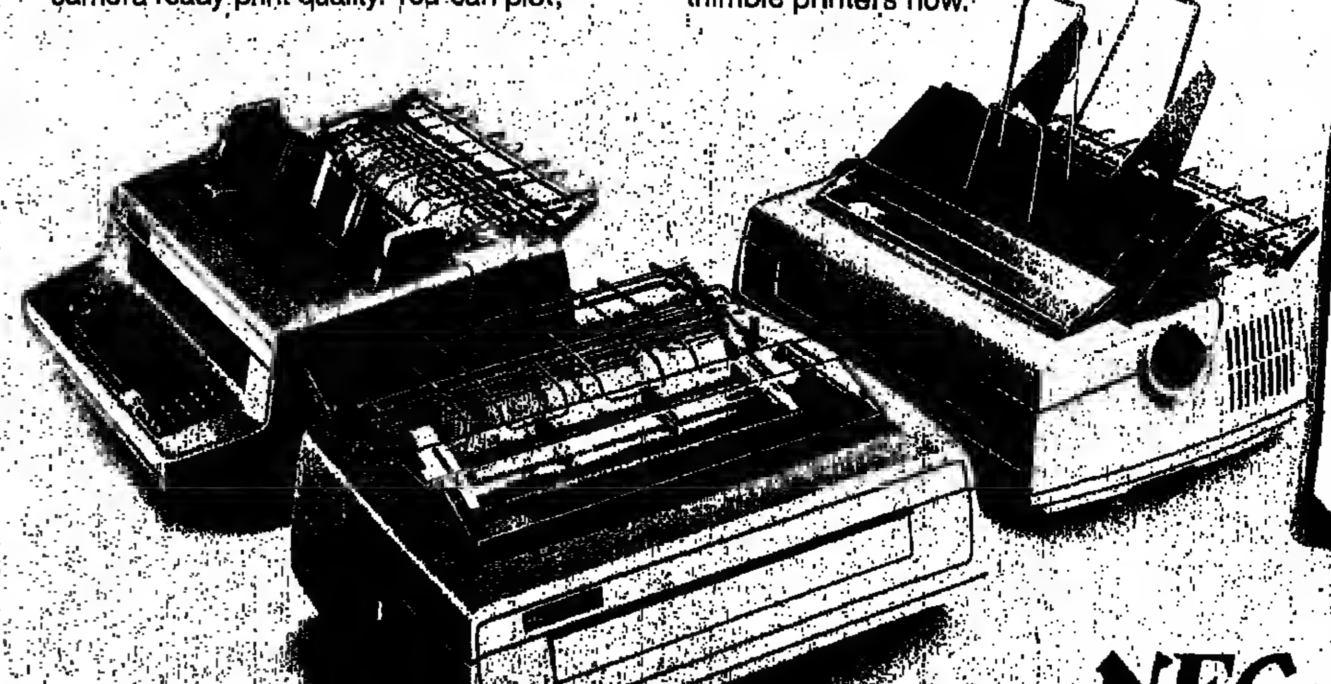

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IBM expected to have 15 times sales of compatible makers in 1980/85 period

by Keith Jones

SALES of $2.8 billion will be chalked up over the 1980/85 period by manufacturers of IBM compatible processors priced at over $100,000 according to a report* from the US consultancy Creative Strategies. At the same time a report** on IBM's corporate strategy over the next few years has been published by another US consultancy, International Resource Development Inc.

The Creative Strategies report predicts total sales of $46 billion over the five-year period for $100,000-plus mainframes from IBM and plug compatible manufacturers, meaning that IBM will outsell the PCMs by about 15:1. Of this $46 billion total, $21 billion will be accounted for by machines costing less than $3 million.

The report underlines that the majority of sales of PCM mainframes are accounted for by Amdahl and National Advanced Systems, the latter having taken over the business of Itel. But there is no discussion of the launch late last year by IBM of the 3081, the first member of the H-series, or of the 580 processor introduced by Amdahl as its answer to the 3081. The AS/9000 from NAS, which is based on the Hitachi M200H, is discussed briefly. But there is no mention, understandably, of the M280 announced just a few weeks ago by Hitachi.

The report from International Resource Development looks at IBM's strategies with consumer and communications products as well as with the H-series. It speculates that it will be at least two more years before IBM's next major announcement following the H-series debut with the 3081.

Online Conferences is holding a conference on March 31 and April 1 called "The User's Guide to the Impact of Series H" at the Royal Lancaster Hotel in London. It is intended to answer questions on why IBM announced a machine with new technology but no architectural changes.

*Plug Compatible Mainframes. 145 pages. $1195. Creative Strategies International, 4340 Stevens Creek Blvd, Suite 275, San Jose, California 95129, USA. Tel. 0101-408-249-7550.

** IBM (part of IRD's Directions Intelligence series): 69 pages. $125. International Resource Development Inc., 30 High Street, Norwalk, Connecticut, 06851, USA. Tel: 0101-203-866 6914.

Managing director Alan Davies assesses the UK dealer network.

Ohio sets up UK subsidiary

by Donald Kennett

OHIO SCIENTIFIC, maker of the Superboard and Challenger ranges of microcomputers, has launched a wholly-owned subsidiary in the UK, based in Langley, Berks.

Preparations began in November for the establishment of the UK company under managing director Alan Davies and in December the US parent was taken over by communications giant M/A-Com, whose many existing subsidiaries cover a wide range of activities from satellite and microwave systems to semiconductors and optical fibre cables.

Davies has welcomed the takeover, which he believes will strengthen the UK division as it tackles a market for microcomputers estimated to be worth £111 million this year.

Engineering support for the larger systems has been arranged with Systems Reliability.

Magnuson takes off in UK after slow start

DESPITE the highly competitive pricing of the IBM 4300 series, plug compatible supplier Magnuson appears to have got off the ground in the UK after a slow start.

In January alone the company won orders for its M80 series machines from four customers. They were Sunderland Borough Council, fashion house Jaeger based at Kings Lynn, insurance brokers Stewart Wrightson of Kingston-upon-Thames and EPS Consultants of London.

Stewart Wrightson, which has ordered an M80/31, is already a big user of IBM compatible products including disc drives from Storage Technology and the Shadow teleprocessing monitor from Altergo. Software house EPS is installing the biggest available Magnuson machine, an M80/42, at its Wimbledon computer centre. The configuration will include three megabytes of main memory.

Hardware attachment makes the Wordcraft package multi-lingual

by Claire Gooding

A MANCHESTER-based firm has come up with a hardware attachment for the Commodore Pet 8000 series which interfaces with the Wordcraft WP package from Dataview to make it multi-lingual.

Cytek is selling the product under the name Multifont.

"We are pushing the Pet up-market with these additions," said Cytek director Clive Menhinick. "It gives a lot of extras which are not commonly available on US word processors such as currency signs, and allows a number of different character sets to be displayed on the screen in conjunction with the usual business character set."

A small switch on the computer allows a user to switch from one character set to another using a daisy wheel printer. "He can set the switch to number two and load all the data for, say, French clients and produce letters in French with all the correct accents and notation, and then turn the switch to three and deal with German data using the German character set", explained Menhinick.

Cytek is marketing Multifont on four separate fronts at the moment: legal, commercial, scientific and European character sets.

Multifont interfaces with Quince or Wordcraft, and costs £172.

Four suppliers on Bank of Ireland's list

A £4 MILLION contract is being competed for in the Irish Republic, where the Bank of Ireland is to order terminals for its 350 branches throughout the country.

A potential suppliers' list of 11 has now been reduced to four: IBM, Nixdorf, Philips and Olivetti.

The Bank of Ireland decision is expected within six weeks, and will mean that the selected company could look forward to at least a 10-year association.

As well as the supply of terminals, the bank's special assessment team is evaluating proposals for the central system.

Perkin-Elmer's 32-bit rival to the IBM 4341

by Brandon Gamester

SUPERMINI manufacturer Perkin-Elmer Data Systems has launched a 32-bit processor said to offer comparable performance to IBM's 4341 Model 1.

By selling the processor with its already established transaction monitor, Reliance, the company hopes to capture a large market with commercial users such as banks and insurance companies, requiring high performance transaction processing.

The 3230, which can be expanded to address up to eight megabytes of main memory, slots into the 3200 Series between the bottom of range 3220 and the higher performance 3240, which can address up to 16 megabytes.

When compared using a variety of benchmark tests with DEC's 32-bit mini, the 3230 is said to provide 94% of the performance of the VAX 11/780 at a much reduced price. A typical 3230 system would cost about £70,000, says the company.

Although the main market for 32-bit minis has traditionally been for scientific applications, product manager Fred Mascarenhas told Computer Weekly that sales are now much stronger for commercial applications, about 70%-80% of the company's machines going to this sector.

Deliveries of the 3230 will start immediately.

● SEL Computers is also stepping up its marketing of 32-bit minis with the three new systems options based on its 3277 machine.

In the middle and top of the range an internal processing unit (IPU) leaves the CPU to control I/O and interrupt operations. This results in a very high system throughput, says SEL. The further addition of floating point units enable the CPU and IPU to perform floating point operations at high speed.

All three systems are expandable to 16 megabytes of main memory.

NEWS BRIEF

Navy buys ICL 2976s

THE Royal Navy is buying three ICL 2976 mainframes and about 200 terminals to replace its existing separate stock control computers with a single unified system operating across the country. The entire project is understood to be costing around £10 million, including £2 million for software.

ME29 success

THE sales success of the ICL ME 29 continues with the announcement that the ICL machine is to replace an IBM System 3 at Maritz UK, the agency that runs employee motivation schemes for 200 client companies. The contract is worth £250,000 and includes software modules for award computation based on ICL's Prosper.

16-bit agreement

SIGNETICS, together with its parent, Philips, has signed an alternative source agreement with Motorola covering the 16-bit M68000 microprocessor. The agreement is described as being "aimed at creating the industry's strongest 16-bit product line".

Memory boost

A GENERAL purpose memory system claimed to be the first standard system with built-in intelligence, memory fault tolerance, advanced diagnostics and preventive maintenance features has been announced by Intel. Called the iQX system, it can come with dynamic and static storage intermixed and is added to Intel's Series 90 memory family.

Cut-price

SYSTEMS builders could be interested in a cut-price multiple peripheral offer from CPU Computers of Woking. The total one-off price has been reduced from £4,500 to £2,990 for one 60 cps Centronics matrix printer, two Shugart eight-inch floppy disc drives, one eight-inch Winchester drive with controllers and a CPU Pentland VDU.

Recruitment firm

BEGINNING its trade in March is a new company for the recruiting and appointing of DP staff. Sloan Gate, based in Kingston, deals with "the whole gamut of DP professionals" on its appointments register on a flat fee system.

Iran business

HONEYWELL Italia, which covers the Iranian market on behalf of its US parent, has issued a statement saying that any resumption of business there is "subject to the evolution of relationships between Iran and the USA". It was not ready yet to resume business with its Iranian distributor, Isiran.

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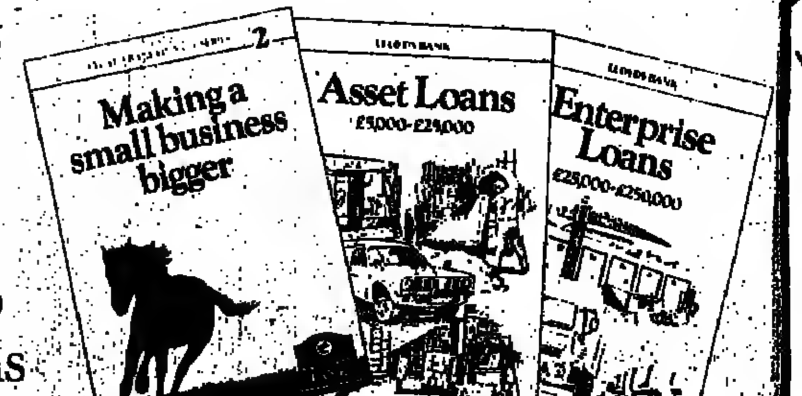

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More help for business
At the sign of the Black Horse

LLOYDS BANK

by Claire Gooding

200 screens will link to joint WP and DP system

by Rory Johnston

A COMBINED word and data processing system complete with its own local area networking system has been launched by Omnidata, the California firm that hsa designed products for Triumph Adler and is now branching out on its own.

A xerographic printer from U-Bix in Japan is expected to be available as an optional extra by the end of the year.

Up to 200 screens can be ottached to Omninet, the 1.5-megabit local network that uses IBM SDLC protocols to provide access to shared printers and discs with file processors.

A cluster system called Omnishare is also offered, allowing up to five screens to be operated together.

Omnidata founder Paul van Alstyne, who like others of his Omnidata colleagues took part in the founding of Wordplex, predicted that salea of clustered word processors would overtake those of standalone machines by 1983.

A direct marketing operation for Omnidata is starting up in the UK, and it is planned to open a factory for system assembly in Nigeria.

Omnidata is 46% owned by Triumph Adler (which is ultimately owned by Volkswagen) and the Omnidata team were involved in the desigo of the Bitsy word processor which TA has been selling for nearly two years worldwide.

The Omni 2 consists of separate screen, keyboard and twin floppy disc units which can nestle together on a desk. Mathematical and sorting functions are provided when in word processor mode, and data processing csn be done either in Cobol or Basic. Including a Qume daisy-wheel printer, one Omni 2 sells for £6,250.

The U-Bix printer will also act as a copier and will sell for between £10,000 and £15,000.

Surveying the Omni 2 assembly line in Westlake, California, are two of the firm's founders, Paul van Alstyne and George Greenspon, who have switched from designing word processors for other people to working for themselves.

Dealers attack CAP

by Kevin Cahill

MAJOR criticisms of UK software giant CAP were voiced at a meeting of Sord dealers.

The meeting, in Beaconsfield, was attended by 14 dealers from all over the UK, and the Penzance-based Sord distributor, Exleigh Business Systems.

Dealers at the meeting, called to launch the Sord master bakers' package and to demonstrate the PIPS data handling software, complained about hsving to buy demonstration software from CAP, unfriendly prompts and difficult manuals.

Don Martin, a director of Exleigh Business Systems, described the meeting as stormy. He felt, however, that he had been able to calm some of the dealers' fears by pointing out that extensive research in the UK and abroad had failed to produce a better set of packages than CAP's.

A spokesman for CAP said they were sorry to hear of the criticism and hoped that the new CAP structure would make support to the dealers easier and better.

Basic aim to beat the program pirates

TWO Basic products for use on the Commodore Pet have been released by a Dorset-based company to try and combat not only Basic's limitations in speed and performance, but also the illicit copying of programs written in the language.

DTL-Basic is the name of Drive Technology's compiler, which is said to reduce the run-times usually associated with the use of an interpreter, and also, since compiled programs are more compact, use less of the precious 32K-bytes of RAM on the Pet.

While DTL-Basic is aimed at hobbyists and educational users who do not intend to sell programs, a more sophisticated version of the same product is available for those concerned with protecting their software development, called DTL-P-Basic.

Both products are said to be fully compatible with the Commodore Interpreter, so that existing programs can be re-compiled to run 10 to 20 times faster. It also converts integers to real numbers for speed and accepts extensions to Basic implemented in assembly language on RAM or ROM.

The idea behind the protected version of DTL-Basic is to stop illicit copying and piracy by putting user-copies on protected discs, formatted by DTL so that they cannot be copied or duplicated.

DTL estimates that for every copy of a program sold, two or three copies are illicitly made.

The method of protection is closely tied to Commodore disc technology. "We use a special utility in the disc drive RAMS which formats the disc so that certain tracks will give errors if they're read" explained David Hughes of Drive Technology. "In fact they do contain information and programs won't run without it. Every time you run a compiled program on the protected version, it looks for that information, and if it's not there it corrupts itself and dies. This protects the whole disc being copied as well as individual files."

Although Hughes acknowledges the universal truth that any protection system written can be busted, he reckons that his is more foolproof than most, since it has several layers to penetrate.

Versions of the compiler have been developed for the 3000 range of Commodore machines and the 4000/8000 range. Prices for the 3000 range, which should be available in April, are £300 for compiler and manual, with £100 for annual update service for DTL-Basic.

For the protected version, DTL-P-Basic, manual and compiler cost £900, with the update service at £200 and a box of 10 protected discs for £180. But for the author who plans to sell his work commercially, Hughes suggests that the compiler will pay for itself quickly, as well as offering advantages in allowing more space for generously commented programs and therefore better documentation and maintenance.

ON the assumption that engineers need friendly computers, the Royal Aeronautical Society's Engineering Sciences Data Unit has produced two "user friendly" graphics packages aimed at cutting out much repetitive and time-consuming calculation in design areas such as structural engineering, material fatigue and fluid mechanics. The packages, called COMpacs, allow engineers with no special training in computing or programming to perform calculations and see immediate results on the screen, using Tektronix 4051 graphics computers, as pictured here.

Package designed for first-time user

EXLEIGH Business Systems has announced two new packages to run on the Sord range of microcomputers which Exleigh distributes in the UK.

PIPS is a text and file handling package which is said to allow the first-time user to create, sort, juggle, and analyse data without programming knowledge. The second package, as yet unnamed, is a specially tailored general accounts package for the Master Bakers Association.

Ada's place in 'Tower of Babel'

DR KNUT RIPKEN, who leads the team developing the front-end Ada compiler, is to present a seminar on Ada, designed to inform marketing and software professionals of the latest developments in the language.

The seminar is to be held in London on April 23/24, sponsored by the Education Foundation of the US Data Processing Management Association and the UK IDPM. It is to focus on Ada's place in the programmer's "Tower of Babel", its main features and programming environment, as well as specific areas of writing and designing for the language.

Those interested in attending should contact H. Flournoy at State of the Art Ltd, on 01-242 4045.

IN last week's report on the Gower software protection conference reference was made to a software package called Locksmith. This is marketed by Software Products Inc, not by Sensible Software as we reported, which makes a similar product known as Back-it-up.

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ADP subsidiary to specialise in hotel computers

by Keith Jones

SEEING great potential in the hotel business for computer systems sales, ADP Network Services has set up a separate subsidiary company, ADP Hotel Services, to concentrate entirely on a market estimated to be worth about £100 million a year.

The main offering from ADP Hotel Services is a system based on the Rair Black Box multi-screen microcomputer. It comes with software development by ADP for handling jobs like local reservations, room management, food and beverage stock control, function booking, personnel records, and accounting operations such as ledger updating and profit and loss reports.

Hotel groups will be able to use their Black Box terminals to link into the ADP network for accounts control and central reservation processing, and all users will dump files on to the network for back-up.

The concept of a local system operating in conjunction with its network facilities is not new to ADP. For several years the company has been promoting its Onsite service where most of the workload of a big customer is run on a dedicated Digital Equipment DECsystem 2020 while ADP's DECsystem 10 based worldwide network service remains available.

For this reason ADP has seen fit to use a play on words, ADP innsite, to describe its new hotel service. It was developed entirely in the UK but ADP expects to promote it in overseas markets.

ADP says that it selected the UK Black Box microcomputer for reasons like its multi-terminal configuration — there are at least two screens on each machine — the availability of a five-megabyte hard disc drive, easy access to the original supplier and the popular CP/M operating system which provides the possibility of software portability if an alternative machine model is ever needed.

To strengthen its credibility in the hotel business ADP has hired Alan Coby as ADP Hotel Services managing director. He has 12 years' experience in the hotel industry where he has developed systems for applications like management information, financial accounting and reporting. Coby referred to a survey carried out early last year in conjunction with the British Association of Hotel Accountants which revealed that nearly 90% of the 60 hotel groups reviewed used some form of computer facility but felt that there was a need for suppliers to specialise in hotel applications.

ADP's batch and network services are already used by 500 hotels in the UK and the US.

Fastest datacomms growth in information retrieval

by Donald Kennett

INFORMATION retrieval and person-to-person communication are likely to be the fastest-growing applications of data communication in Europe during the 1980s while point-of-sale is unlikely to take off until the 1990s, because such a high degree of co-operation and co-ordination is required between banks and other users.

This is reported by Robert Jackson, a member of the Logica team which carried out the Eurodata 79 study for the European PTTs. His paper on user applications was one of 11 presented by the study team at a seminar organised by Online.

Videotex or viewdata was identified as being of major importance, and attractive to a wide range of business users.

Viewdata terminal numbers in Europe were expected to reach 2.1 million by 1987, the end of the period covered by the study, while all other types totalled four million. But 1987 was expected to be the start of a period of extremely rapid growth, after the numbers had taken until mid-1985 to reach one million, and late-1986 to reach two million.

Wideband transmission equipment had formed a small and falling proportion of all data terminals between 1973 and 1979, according to a paper by Tim Johnson who managed the study, but this was likely to change during the 1980s.

Roy Atherton teaches Comal on a Piccolo microcomputer.

'Comal easier to learn for beginners'

by Nicholas Benwell

OVER the last five years or so, the Danes have caused quite a stir with their new language called Comal (Common algorithmic language).

A structured version of Basic, its full name is Comal 80 and it preserves Basic's didactic qualities.

Roy Atherton, the UK Comal guru, organised a conference at Bulmershe College where he explained to some 80 teachers, and others, the advantages that they would gain for their students by switching to Comal.

Comal was said to be easier for beginners to learn than Basic because it tackles problems like number doubling in a way which relates more closely to a human approach. The resulting programs were likely to be shorter than when written in a computing language and it was easier to debug.

Pascal, perhaps Comal's nearest relative, was too difficult for the under 16s, and yet Comal programs, on average, are half the length of equivalent Pascal versions, insists Atherton.

Comal is currently implemented on only two or three microcomputers, so the field is wide open for the computer industry to adopt this new language. The style of implementation, though, is important as it is mainly diskette-based at the moment with the result that something of a juggling act is needed to set up a system.

Richard Kubica of MMS Computer Systems, himself an ex-teacher, feels that supplying it on a ROM, as Commodore Business Systems is proposing, is the way forward.

Controlling food and drink

by Chris Youett

WHAT is thought to be the first system for food and beverage stock control was launched by the Hotel Systems Division of Monotype Communications, at the Catering Equipment, Food and Services Exhibition. It costs between £...00 and £40,000.

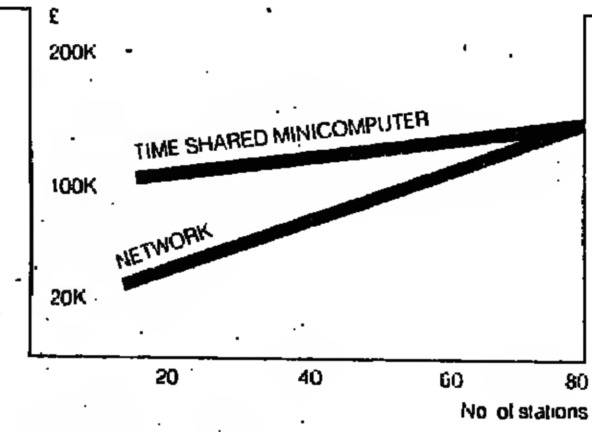
A Monotype spokesman said previous attempts to provide this service had failed because would-be users and systems houses had tried to bend US software to fit a UK environment.

Monotype commissioned Multiple Systems Ltd to write the software to its own specification.

The system is menu driven and is designed for use in hotels, colleges, industrial caterers and banqueting firms. It has three main functions: maintenance and reporting, recipe costing and working out menus.

The system can be used for up to eight sales outlets and can handle up to eight pricing structures.

The software is written in a Cobol-like language but conversion packs for Pascal, Basic, Fortran and Assembler are also available. The spokesman said Monotype's word processing software was also supplied free with every system.



One day all computer networks will be this cost-effective

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Rory Johnston meets John Imlay, chairman of a remarkable software company that is charting a new course

MSA aims to be a major force in office of the future

THE announcement that US software products house Management Science America was going public, has focussed attention on a firm with a colourful history and on its even more colourful chairman, John Imlay.

Based on the unspectacular field of financial and accounting packages, the company has turned, under Imlay's leadership, from a long and tortuous bankruptcy in the early Seventies to a turnover today of $50 million, and is aiming to become a major force in the office of the future.

Up to now MSA has stuck fairly closely to its original product line of applications packages for financial reporting, ledgers, and payroll. Customers are offered standard options to fit their systems to the varying laws of different states, and are saved the considerable expense of program maintenance by the updates issued by MSA whenever, for instance, tax laws change.

"There's no difference between what we are doing and developing a record for a record player."

Now, however, Imlay is charting a new course for the company based on his own vision of the software house as the only sensible source for a design for the automated office.

"Somebody has to tie the systems together," he says, adding that it will not be the companies already in the field. "They all have a hardware mentality," he asserts.

To this end, part of the proceeds of the sale of 1½ million shares will go towards acquiring small companies to provide MSA with expertise it does not already have. Out of this is intended to come a system design for the office of the future that the customer will be able to run on whatever hardware he wants. "I don't care about the hardware as long as it has the capabilities needed," Imlay says.

Here he is flying in the face of all the opinion that says that office systems running on general purpose rather than specially designed hardware tend to be difficult to use and unsuited to the office environment and office workers.

He asserts adamantly, "There's no difference between what we are doing and developing a record for a record player."

Firms such as Exxon, Imlay says, are going to be selling a hardware product even though they claim to be selling a system.

In contrast, he suggests, "the fellow who designs a system without hardware will be giving the real value added," and this he intends to do, to run on practically anyone's kit.

He adds with a smile, "I want to be nice to Exxon."

Developments in communications are especially significant for Imlay's office of the future thinking. With satellites and cheap earth stations providing almost unlimited bandwidth, electronic mail and teleconferencing will become easily available and convenient, and so must be a central part of the system design. Teleconferencing, incidentally, is something Imlay is already enthusiastically using at MSA to link the offices that are scattered around the country.

"It provides lots of empathy," he says.

Looking at MSA's traditional product line, Imlay says, "Business prospects are stronger than ever." The recession is causing some difficulty in getting orders actually signed, but on the whole, financial stringencies lead to more demand for his money-saving products, not less, Imlay believes. "The market is expanding faster than we can," he says.

IMLAY . . . *"I don't care about the hardware as long as it has the capabilities needed."*

The introduction of the IBM 4300 range has given MSA 200,000 new prospects, Imlay estimates, and with current penetration of the market less than 5%, the company is aiming to grow to 15,000 customers in the not too distant future.

A UK office has been opened, and expansion is also under way into Australia, Canada, and Belgium.

UK financial reporting and ledger requirements are similar to those in the US, so MSA's software for those areas can be used here without much change, but payroll systems are totally different. For that reason MSA bought QPAC and its existing products, giving Imlay a complete range here.

He does not see himself as competing against UK software houses, but rather with their US equivalents and multinationals such as IBM and RTZ.

He sees little threat from microcomputers, regarding them as being in a different league from the nine mainframes his products will currently run on. There are plans to develop versions for the Hewlett Packard 3000, but Apples and Pets do not enter his thinking.

Where Imlay does see the spectre of competition is from Japan. Software is Japan's Achilles heel at the moment, Imlay says, "But in two years they will realise they need software and then . . ."

"The fellow who designs a system without the hardware will be giving the real value added."

With government loans and tax concessions, and their traditional high productivity, the Japanese will be a major competitor by 1985 as Imlay sees it. "And I don't relish the thought."

Imlay's involvement with MSA has been eventful, to say the least. Having been a salesman with Univac and Honeywell, he first came to the seven-year-old MSA in 1968, to sort out the problems caused by an over-rapid expansion. Over the next three years the firm went through a tortuous bankruptcy and Imlay was sacked twice.

Eventually he was reinstated at the insistence of creditors, he repaid all the major secured debts, and since 1972 the firm's turnover has grown from $2.7 million to $50 million without getting out of control.

The success of the rescue gave Imlay a chance to look outside at broader issues, and for 1979 he was president of ADAPSO, the US computing services association, the first to come from a software products house.

The issues of software copyright and unfair competition from the banks and accountants preoccupied him there. His efforts on copyright are finally coming to fruition, with a Bill currently before the House of Representatives, and a lawsuit still going on against Citicorp.

Asked what he is especially proud of from his time at ADAPSO, Imlay replies, "We opened up a dialogue with IBM." This included negotiations over software protection and the release of specifications of new products. The latter was largely successful, Imlay feels, and he also managed to get IBM to break up software packages so that the separate parts were small enough for his members to compete against.

He sums up, "We have to live with IBM so we need to talk to them."

Imlay's reputation for dramatic gestures and colourful, outrageous speaking continues unabated. Whether his daring claims over the office of the future will be vindicated or not the computing community is waiting eagerly to see.

Donald Kennett selects three areas of interest from last week's Microsystems 81 conference and exhibition

More work is needed in the upper levels of ISO model

WORK on the upper levels of the ISO layered networking architecture will involve a good deal of thrashing about for some time to come, according to Charlie Bass, co-founder of US local networking company Ungermann-Bass.

In his keynote speech at the Microsystems 81 conference last week, Bass told delegates that bringing together the methods used in many different applications and by many different system suppliers would be quite a feat.

However, it was increasingly recognised that the upper level functions – application, presentation and session control – could be worked out independently of the lower level ones and could remain consistent across different types of lower levels.

"Local networks concentrate on the lower levels," he said. "Ethernet only talks about levels two and three and chips to do Ethernet will only encompass the lower levels. Our product enconipasses the lower four levels and allows the user to get on with five, six and seven."

Bass outlined the alternatives available in local networking, since he thought that no one set of technological approaches would solve the world's problems. Topologies, he felt, were like religions: users were born with an approach and would live and die with it. It probably reflected their outlook and that of the organisation for which they worked.

A large organisation with a hierarchy of computing facilities from mainframes to personal computers would probably have a hierarchical network, which was different from the star topology used by PABXs.

The UK was the centre of the universe for rings, he added, while the bus was preferred by his organisation for its lack of central controller and its use of passive taps.

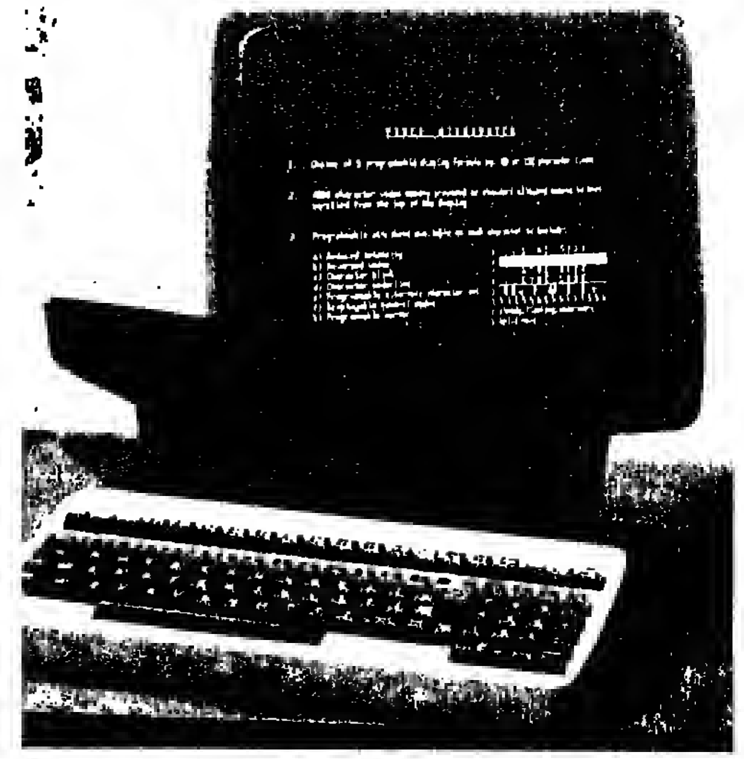
He predicted that in the 1980s local networking would converge with long-haul networking into something called integrated processing, where an individual at a terminal could access local or remote facilities with no apparent difference.

X25 was being used in local networks simply becuse the parties wishing to communicate locally had already implemented it for long-haul communication.

He drew attention to the differences between broadband and baseband transmission. Broadband, in which transmitted data was modulated on to a high frequency carrier, was very attractive to implementers of systems in which video, voice and data traffic were to be handled separately but on the same cable.

Coaxial cable was used extensively in the cable television industry and it provided a bandwidth of up to 300MHz, capable of carrying about 150Mbps of data. Broadband techniques were ripe for leadership towards open networking standards, but the many companies active in the field, including Wang and IBM, were probably more interested in market leadership than standards leadership, he thought.

Bsseband systems, such as Ethernet, had been criticised for being unable to carry video traffic, but they saved on expensive broadband modems, since they put digital signals directly on to the cable. The lack of a modem gave rise to a trade-off between speed and range – 1,500 feet at 10Mbps or 4,000 feet at 4Mbps, as against up to 25 miles for broadband.



Power supply maker Gresham Lion of Feltham, Middx, has diversified into terminals following a deal with James Scott Electronic Developments for the manufacturing and marketing rights to the Lyme 5000 132-column 6809-based VDU.

Zilog turnkey package for systems market

IN an effort to boost its systems sales, micro maker Zilog used Microsystems 81 as the platform to launch a turnkey package based on its established MCZ-1 microcomputer, but now offered with an accounting package which runs under a Commercial Basic with a built-in operating system, as well as a printer and a VDU.

Systems already account for 50% of Zilog's $50 million (last year) worldwide sales, and in Europe the proportion is 60%, but these have always been sold to firms which were primarily customers for components. Systems division's head of European marketing Dr Pamela Geisler said last week it was a bit of a mystery how so many systems had been sold when awareness of Zilog as a systems company was so low.

The aim was now to sign up dealers with expertise in the small business systems market, to complement the dealers whose expertise was rooted in industrial and component products.

Systems division did not aim to compete directly with components division's customers, Geisler said, nor to sell to end users, but systems houses considering developing software for turnkey systems had asked if Zilog could produce a stop-gap accounting package so that they could start selling systems and developing their own software at the same time.

Another request from users through their dealers was for Zilog to back the maintenance process, so another part of the new turnkey package is a maintenance contract with Zilog. Zilog had previously referred customers to Mills Associates for maintenance. It will now contract with third party maintenance companies itself, to service its contracts with users until it builds up its own field engineering team.

The accounting software is licensed from Holland Automation International in Holland, under a royalty agreement and was chosen after several packages were evaluated by accountants. It is an established system and has the added advantage of being available in French, German, Italian, Spanish and other natural languages. Should demand justify, it will be adapted to run under RIO and CP/M, the operating systems already available on Zilog systems.

Similar moves are being made by Zilog in the US, but there it is using Cobol programs instead of Basic.

The turnkey system with an Anadex 9502 matrix printer costs £4,830 and with an NEC Spinwriter petal printer £5,535. The Wordstar word processing software from Micropro is an option and versions run either under RIO or under CP/M.

Swedish redesign ABC-80

SWEDISH design house Data Industrie has re-engineered its ABC-80 Z80-based microcomputer. The new version, called the ABC-800, is to be produced at the rate of 50 a day from mid-April by Swedish television manufacturer Luxor, which also makes the ABC-80. It will be sold in the UK by Microtech of Knutsford, Cheshire.

Data Industrie has also sold a licence for the ABC-800 to an unnamed "large US company with interests in the field," and which is said to have 100 programmers writing applications programs for it now. The deal is to be announced officially at the Hanover Fair.

Additional hardware for the system includes a video driver board containing up to 18K-bytes of RAM and capable of controlling an eight-colour graphics display with a resolution of 240 by 240 picture points.

The Basic has also been improved and is now compatible with the US ANSI standard. It has 16 digit floating point arithmetic, variable names up to 32 characters long, and colour graphics handling instructions such as Vector and Paint.

Data Industrie also showed a colour graphics system called Datacolour, which has a resolution of up to 640 by 512 picture points and is capable of being connected to an external computer via a V24 interface or operating as a standalone unit. Prices start at about £4,000 plus the colour monitor and input aids such as a digitiser pad and software.

No connection

On March 5, Micro News reported on a high resolution graphics package for the Apple II, which is available from Systemics Ltd, 3 Hillberry Court, Bushey, Herts. The company has no connection with Systematics Ltd, which is part of the Systematics International Group, and is based in Basildon, Essex.

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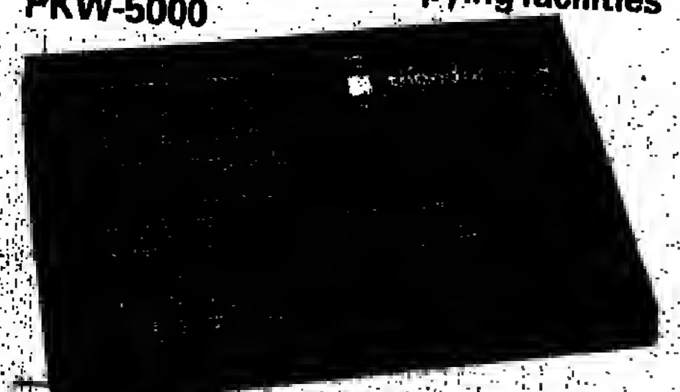

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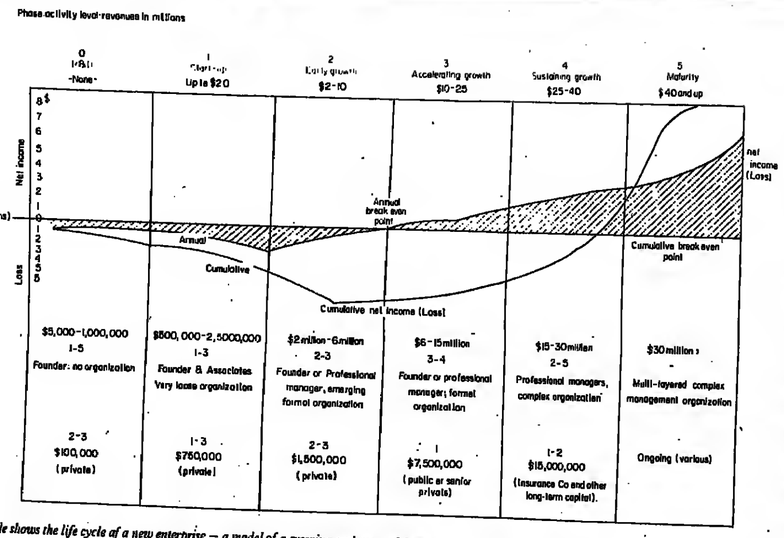

This table shows the life cycle of a new enterprise – a model of a growing and successful company.

Setting up your own company – 3

How to finance an expanding enterprise

by Kevin Cahill

IN this third article on the care and financial maintenance of small computer companies, we look at some of the problems which are likely to face the entrepreneur as he or she moves from a one-man operation to larger things.

So far we have assumed that the operation is a one-man/woman company, maybe selling a contract service, or a consultancy. Because there is such a substantial difference between pure trading companies and a software or hardware manufacturer, we will assume for the remainder of this series that the company, like a lot of small computer companies, does a bit of manufacturing and selling.

The first thing to consider is the cash flow. Is there going to be enough money coming in fast enough to pay the bills as they fall due?

The key bill, as the company moves from sole proprietor, is wages. The salaries must be paid each month, whatever happens.

This, then, is the moment to look at the various start-up and equity-related loans available.

Basically, equity is an investment in a company, not a loan, and is usually recorded in the form of shares given to the investor.

The advantages of equity are that, unlike a loan, it is not basically repayable, and the interest is determinable by the company itself, in the form of dividends. The investor logically hopes to make an income from his investment and perhaps capital gains by selling his or her shares later. But the main advantage from a small company's point of view is that there is no burden of capital repayment.

Assuming that you are a small software house, writing software for the hardware you buy from an OEM manufacturer, and selling the results as a package, you are going to face two problems: You will have to pay your supplier, maybe long before you are paid yourself. And you are going to have to pay yourself and your programmers while you write test and implement the software.

If you consider your approach or your software unique, you may be able to get extended credit from your supplier. But beware – this road to ruin is paved with the corpses of small outfits which had the credit strings from a supplier drawn tighter than originally promised.

At this point you should consider the kind of capital needed to get you into a reasonably comfortable trading position. As a rule of thumb, look for equity capital to cover one year's trading. The Barclays start-up loan mentioned in last week's table should help most mixed software/hardware companies off the ground.

But suppose you have a project which will take more than a year to get into production and into the marketplace. What then? Or, if you have been expanding and that your initial capital is no longer covering your gap between sales and payments?

On the left is a table which shows the various stages of a growing company. You should be able to match the growth of your own company against the table and see what you should be looking for in the way of finance at any given moment.

When you have outgrown the small start-up loans and into equity funding, you will begin to think of specialised financing. Here there are many schemes available which offer equity rather than loans, or a mixed package of both. The NRDC offers such packages, so do many merchant banks.

If you are to apply for these packages the first thing you will need is a business plan, the other being to demonstrate to your potential backers who and what you and your company are.

In America business plans are run to volumes, but traditionally here in the UK they run from 10 to 25 pages.

The business plan should show, at the very beginning, the pedigree of the team which is to run the company. This can be in the form of a CV of each of the key members of the team.

Then you should set out in non-technical language a description of your company and its key products.

This is usefully followed by an analysis of the markets in which you intend to sell your products, and your plan for organising the sales drive.

Naturally you need a cash flow and any other details of your financing needs.

After that you should put in any other relevant material such as predictions of market growth in the area you intend to operate, and details of your suppliers and contacts.

When you have finished the business plan take a long hard look at it and ask yourself would you put into it the kind of money you are expecting others to?

● In the next article in the series we will look at sources of equity finance, bearing in mind the changes made for investors in the Budget.

CORRECTION: Last week's article on financing for the small company went to press before the Budget and included interest rates which have since been reduced. Contact the relevant banks for details. An error showed that NatWest's business development loans to run from amounts of £2,000 to £100,000. The latter figure should have been £100,000. Apologies.

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Leasing boom

UNITED LEASING, the London leasing company specialising in IBM leases, has reported sharply improved profit and sales for 1980.

Profit was £502,000, over £100,000 up on 1979. If the special item of £530,000, realised from the sale of interests in a management company, is taken into account, gross profit for the year is £1,032,000.

Turnover rose to £9,600,000 from £5,004,400 in 1979.

Turnover up £2m

TURNOVER at Kode International, the Wiltshire-based personal manufacturing and marketing company, rose by nearly £2 million in 1980. Turnover was £10,425,000, against £8,503,000 in 1979.

Pre-tax profit rose to £1,407,000 for 1980, from £1,253,000 in 1979. This was short of expectations which had led the markets to anticipate profit in the region of £1,800,000.

W Europe market to outstrip US by 1991

THE compound annual growth rate for the world electronics market, including computers, will be 8.5% through to 1991 according to Dr Ian Mackintosh.

Speaking to delegates at a Semicon/Europa meeting in Zurich recently Mackintosh said that the total electronics market would be worth $850 billion by 1991, three times what he estimated the worldwide car market to be by then.

By that year the biggest single market will be Western Europe, with annual expenditure of $244 billion, followed closely by the US with $211 billion. Japan will be spending $95 billion by then.

The relative trade balance in electronics by the year 1991 will have Japan in surplus to the tune of $40 billion and Western Europe in deficit by $12 billion, he said.

Ulf Gustavsen, managing director of Norsk Data UK, will push software development for the Norwegian company in Britain.

Fast-growing Norsk sees UK as prime site for software development

NORWEGIAN computer company Norsk Data has revealed a doubling of profits for 1980, to just over £2.5 million from just over £1 million in 1979. Turnover for Norsk rose by £8 million to £25 million in 1980. The shares stood at just over 400 Kroner on the Norwegian stock exchange last week, up from 110 Kroner late last year (£33.40 against £9.90).

The figures, which were revealed at the opening of Norsk Data's new UK headquarters in Newbury, have led City moneymen to speculate that the company may raise funds in the UK. Certain institutions are understood already to have holdings in the parent company in Norway.

Ulf Gustavsen, managing director of Norsk UK, refused to respond to questions about the possibility of UK financing for the company. Chairman of the Norwegian parent company Asmond Slogendal said that he would not rule it out but that there were no immediate plans for either a listing on the UK Stock Exchange or for raising private equity.

Norsk Data has just moved its UK office from London to Newbury and announced plans for a range of developments which could provide 20 to 40 more jobs in the area.

The company claims an annual growth rate, in terms of staff and sales, of 40% per annum for the past 13 years, and sees the UK as a substantial growth market for computers.

Slogendal said the company recognised the problems of the UK recession, but felt that the "customised" approach adopted by Norsk Data had enabled it to expand its customer base, despite the problems of the economy.

The company has recently installed systems at Hull College of Higher Education and at Pitman Press. The latter is an indication of a move out of the almost exclusively scientific and academic area to which it has been confined since opening in the UK with the installation at Exeter University's department of computer science.

The company has just won a £10 to £12 million order for the flight simulators for the American F16 fighter bomber, and the CERN project at Geneva now has over 150 Norsk computers installed.

Slogendal said that plans for the UK were to continue to import machines from the Norwegian parent, but to do all the software and technical development locally. It is very difficult to recruit suitably qualified software people in Norway, he added.

NEB makes big profit offloading ATS shares

THE National Enterprise Board has made another four-figure percentage profit on the sale of its stake in a high technology company.

It has sold 75,000 shares in Automation and Technical Services (Holdings) for £806,250 at a profit of 1,512%. The NEB took £100,000 of preference shares in April 1978, which have now been redeemed at par (their face value) and £50,000 of equity, representing a 30% stake in the company. These are the shares which have made the profit.

Another 14 shareholders have also sold a further 20% of the equity at the same price – £10.75 per share, says the company.

Buyers of the shares are two groups seeking investments in high technology companies, Innotech Investments and investment trusts managed by Murray Johnstone. Innotech now has a 33% stake in ATS, while Murray Johnstone's clients, Laurence, Proust & Co and ATS' employees, have raised their stakes from 18% to 29%.

ATS (Holdings) is the parent company of ATS Communications and ATS Telemetry, formed in 1969 and now based in Haywards Heath. The two make a range of telegraphic communications systems including Vitel telegraph-compatible VDUs, telex auto dial and message distribution systems, and telemetry remote process control equipment.

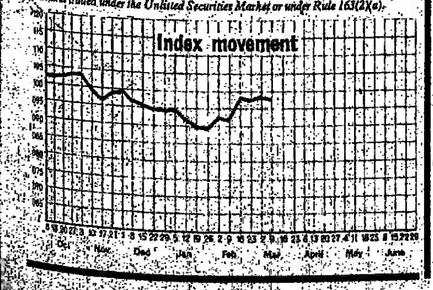
CW SHARES TABLE

Date: 12/3/81 — Index: 97.50 Change: – 0.60

1981 High	1981 Low	London Stock Exchange Stock	Price	Chge
170	118	A Comp Tech (25p)	135	–
102	62	ADC Int (50p)	75	–
20	18	B Bee Vent (25p)	18	–
98	68	Chubb (50p)	68	–
180	112	Cole (A.K.) (25p)	112	–
70	46	De La Rue (25p)	56	–
171	111	Extel (25p)	156	-20
472	472	Ferranti (50p)	472	–
1,050	850	GEC (25p)	875	-20
50	36	GEC (5p)	42	–
78	53	ICL (25p)	58	–
140	100	Kalamazoo (10p)	118	–
112	80	Lucas Ind (25p)	100	–
260	200	Micro Focus (10p)	260	–
250	200	Office & Elec (25p)	233	+ 3
360	250	Prime Telmn (R) (5p)	360	+ 5
220	160	Racal (50p)	214	+ 3
160	110	Sec Glass (50p)	148	+ 2
150	100	Tandy Corp (25p)	138	–
360	260	Thorn-EMI (£1)	360	+ 7
		OTHER MARKETS		
710	710	Comp & Systems (6p)	780	+ 50
270	270	Dowty	270	+ 10
180	180	Quest Auto (10p)	178	–
360	360	Scrip & Nolan (10p)	360	–
		Sendata (10p)	200	– 15
		US Stocks		$
30.00	21.00	Amdahl	27.00	+ 1.00
30.00	21.00	Apple Inc	21.00	+ 1.00
4.00	4.00	Auto Data Pro	6.00	+ 0.25
9.00	6.00	Borroughs	8.00	+ 0.50
16.00	9.00	Commodore	9.00	+ 0.50
14.00	14.00	Comp Automation	14.00	– 0.50

1981 High	1981 Low	US Stocks	Price	Chge
31	21	Comp Sciences	28	–
18	18	Computrvn	18	–
38	28	Control Data	28	– 1/2
30	21	Cray Research	28	– 1/2
50	45	Data General	45	– 1/2
56	46	Datapoint	46	– 1/2
36	31	Datavision	31	– 1/2
36	31	Digital Equipment	31	– 1/2
43	35	Ele Data Sys	35	– 1/2
45	36	Gen Automation	36	– 1/2
50	44	Harris	44	– 1/2
34	28	Hewlett Packard	28	– 1/2
104	86	Honeywell	104	– 1/2
38	30	IBM	30	– 1/2
67	51	Intel	51	– 1/2
18	16	Logicon	16	– 1/2
28	18	Magnetic Periph	18	– 1/2
18	16	Magnetic Automn	16	– 1/2
18	16	Memorex	16	– 1/2
18	16	Modular Comp	16	– 1/2
18	16	Nashua	16	– 1/2
30	26	National Semi	26	– 1/2
18	16	Norsk	16	– 1/2
18	16	Perkin Elmer	16	– 1/2
18	16	Prime	16	– 1/2
18	16	Raytheon	16	– 1/2
18	16	Sperry Corp	16	– 1/2
18	16	Storage Tech	16	– 1/2
18	16	Tandy	16	– 1/2
18	16	Telex	16	– 1/2
18	16	Triple Industries	16	– 1/2
18	16	Tymshare	16	– 1/2
18	16	Wang Lab B	16	– 1/2

The table shows the closing prices in America on Thursday and the mid-day prices on Friday for London. The share index is based on the prices of the UK companies in the table. Highs and Lows have been adjusted where necessary.
** Shares traded under the Unlisted Securities Market or under Rule 163(2)(e).*



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LEGAL OPINION

When a program needs a copyright notice

Bryan Niblett is a barrister and computer scientist specialising in the legal problems associated with computers.

MANY books, pamphlets, journals, articles and — increasingly — computer programs contain, at or near the beginning of the work, a notice of copyright.

What is the purpose of the notice, and when and where should it be fixed to a computer program?

The first point to emphasise is that a copyright notice is not a requirement of UK copyright law and conveys no advantage to the UK owner of a copyright work in this country. The purpose of the notice is to obtain the benefit of copyright protection for published works overseas.

There are two major international copyright treaties, the Berne Convention dating back to 1886 and the Universal Copyright Convention established under the auspices of UNESCO in 1952. The UK is a member of both.

The Berne Convention requires no formalities for the exercise of the rights it confers, whereas the UCC, which offers a lower standard of protection, provides that all formalities are satisfied if from the time of first publication all copies bear the symbol© accompanied by the name of the copyright proprietor and the year of first publication.

□ □ □

A copyright notice is therefore required for works which are published in countries that are members of the UCC but not of the Berne Union. The principal country in this category is the US and in practice the primary reason for affixing a copyright notice is to secure protection there.

Under the 1909 US Copyright Act, failure to include a notice, or a correct one, could seriously affect copyright protection or, as in the Data Cash case, eliminate it altogether. Under the 1976 US Copyright Act (which came into effect on January 1, 1978) an accidental omission is not quite so serious but nonetheless it is still important to include the notice in the right form on all published copies.

The copyright notice consists of three elements: the internationally recognised symbol © which tells the reader that copyright is claimed; the year of first publication; and the name of the copyright owner. So if John Doe owns the whole copyright in a computer program, or in a subroutine, a valid copyright notice would be the line

©John Doe 1981

as a comment in the first few lines of the source code of the program or the routine.

If the program is a joint work then the notice might take the form

© John Doe and Richard Roe 1981

□ □ □

Where a computer program consists of a number of separate and independently owned sub-routines assembled into one collective work (rather like an anthology of poems) a single copyright notice at the beginning of the work giving the name of the owner of the program is sufficient to protect the copyright in the collective work and in the individual routines.

The UCC Convention provides that the copyright notice should be placed "in such manner and location as to give reasonable notice of claim of copyright." Proposed regulations issued by the US Copyright Office give examples of how this may be done for a program in machine-readable form. The notice should be embodied in the object code so that it appears in visually perceptible form on any print-out. The notice may be displayed at a user's terminal at sign-on, or as a continuous display at the terminal.

Furthermore, a permanent notice should be affixed to a box, reel, cartridge, cassette or other container used as receptacle for the copies.

Finally, how do we include the notice © in a program when this symbol does not form part of the usual character set? The answer, as far as the US is concerned, is that the full word "Copyright" or the abbreviation "Copr" may legitimately be used as alternatives.

Bryan Niblett

MICHIE'S PRIVATEVIEW

High road and low road procedures

CONSIDER a class of computing problem for which all sufficiently short programs are too slow and all sufficiently fast programs are too large. Must non-standard problems of this kind were left strictly alone for the first 20 years or so of the computing era. There were two good reasons.

First, the above definition rules out both the algorithmic and the database type of solution. Second, at a pinch a human expert could usually be found who was able at least to compute acceptable approximations — for transport scheduling, job-shop allocation, inventory optimisation, or whatever large combinatorial domain might happen to be involved.

Let us now place problem-solving by machine in the more precise mental context of evaluating two particular kinds of finite functions, namely

s: Situations→Actions, and

t: Situations × Actions→Situations.

These expressions say that s maps from a set of situations (state-descriptions) to a set of actions and that t maps from a set of situation-action pairs to a set of situations. The function symbol s can be thought of as standing for "strategy" and t as standing for "transform". To evaluate s is to answer the question: "What to do in this situation?" To evaluate t corresponds to "If in this situation such-and-such were done, what situation would be the immediate result?"

If the problem-domain were bicycling, we could probably construct a serviceable lookup table of s from a frame-by-frame examination of filmed records of bicyclists in action. But I would certainly be too large for such an approach. The only way to predict the next frame of a filmed sequence would be by numerically computing t using a Newtonian physics model of the bicycle, its rider and the terrain.

Machine representations corresponding to s and t are often called heuristic and causal respectively. Note that they model different things. The first models a problem-solving skill but says nothing about the problem-domain. The second models the domain including its causality, but in itself says nothing about how to solve problems in it.

The causal model partakes of the essence of the traditional sciences, such as physics. The school physics text has much to say about the tension in a string suspending bananas from the ceiling, about the string's breaking point under stress, the force added if a monkey of stated weight were to hang from a boat-hook of given mass and dimensions having inserted its tip into the bunch, and so forth. *How* the monkey can get the bananas is left as an exercise for the reader, or the monkey.

When it has been possible to couple causal models with various kinds and combinations of search, mathematical programming and analytic methods, then evaluation of t has been taken as the basis for "high road" procedures for evaluating s. In "low road" representations s may be represented directly in machine memory as a set of pattern→advice rules overseen by some more or less simple control structure. A recent pattern-directed heuristic model used for industrial monitoring and control provides for default fall-back into a (computationally costly) causal-analytic model. The system thus "understands" the domain in which its skill is exercised.

The pattern-based skill itself is, however, sufficiently highly tuned to short-circuit, except in rare situations, the need to refer back to that understanding.

The distinction here spelled out corresponds roughly to that made by Rouse and Hunt between S-rules and T-rules in the context of computer-aided fault-diagnosis in complex machinery, for example in automobiles. Their diagram, reproduced here, is simple but illuminating.

The s versus t distinction has nothing whatsoever to do with the strange but widespread notion that problem-solving representations built from causal models are necessarily error-free, proved so by their implementers, and thus in some important sense "sound", while heuristic models are by their nature tainted with unbounded and unquantifiable error. In actuality formal proofs of correctness are no less obtainable for heuristic models than for models of other kinds, provided that the domain is such as to sustain precise mathematical reasoning at all. The only problem-solving device yet to achieve a good and versatile record (the expert brain) has been shown to proceed at "run time" overwhelmingly by the low road. Moreover knowledge engineers are beginning to find in one domain after another that almost all the skill comes from the heuristic model and almost all the implementational and run-time cost from the causal model.

Perhaps this discovery should not have taken people by surprise in quite the way it seems to have done. After all when a Fischer or Karpov plays lightning chess (heuristic rules only, no time for anything else) he can still hold his own against an ordinary Master who is allowed all the time in the world for search and reasoning.

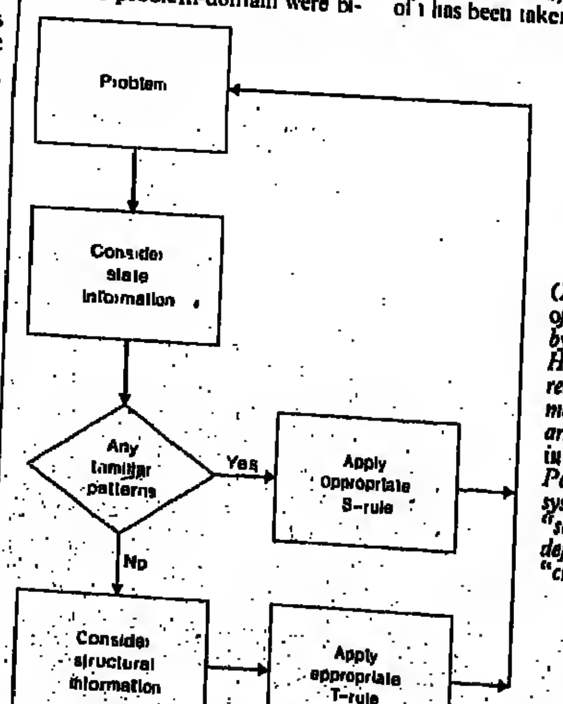
In real-world domains no more complex than chess, insistence on "high road only" has not solved to solutions which are (1) opaque to the user, and (2) intolerably costly at run time.

Someone says: "I need to hire an expert problem-solver, but I don't buy heuristic production rule models. How do I know that they are correct, or with good error bounds?"

He could equally say: "I need to make an omelet, but I don't like eggs. How do I know that they are not addled?" The answer can only be: "Get your eggs certificated, or at the very least buy from a proper farm. If you don't want to do that, then you'll have to lay them yourself."

Donald Michie

Donald Michie is Professor of Machine Intelligence in the University of Edinburgh.



Overall structure of the model used by Rouse and Hunt. There are really two models, so arranged that (as in the system of Pao et al), the system's "science" acts as default for its "craft".

10 YEARS AGO

EVERY week hundreds of people were being hoodwinked into paying large sums to private computer programming schools for totally inadequate courses, a Conservative MP, John Hunt, claimed in the Commons. But the Trade and Industry Under-Secretary, Nicholas Ridley, rejected a suggestion that the NCC be given a larger grant for an inquiry into the recruitment methods and training offered by these private schools . . . Government price preferences for British computers are to be dropped immediately, said Sir John Eden, Minister for Industry. But the government would continue the policy of the previous government to support ICL . . . Following drastic pruning of staff earlier this year, Computer Enterprises Ltd has issued redundancy notices to a further 25 employees. Out of an original staff of 56, only four are now to be given notice . . . The UK computer bureaux industry increased work done by 30 per cent in the third quarter of 1970 compared with the third quarter of 1969 . . . ICL continued to dominate the UK market for computer hardware in 1969 and had a big lead over IBM, according to written evidence submitted to a DoI inquiry . . .

DOWNTIME

There's no such thing as bad publicity!

WHEN the Beatles arrived in New York on their first visit to the States, they were greeted by an enormous cheering crowd like no one there had seen since VJ Day. Asked to what he attributed such enthusiasm before they had even given their first concert, John Lennon replied: "A good publicity agent."

I was reminded of this by a shock story in the Daily Express about The Last One, the software generator that has been the subject of a 1984 piece and some correspondence in this newspaper . . . "Britain to beat all computers" . . . but Britain could lose it, . . . declared the Express, bemoaning the failure of British industry to back the product which "threatens to make redundant the vast army of human programmers." For expert opinion it quoted the editor of another computer magazine describing the program as "the philosopher's stone."

What the Express failed to mention was that the editor in question wrote letters to several publications, including this one, asking them to write about The Last One and to plug his magazine in the process.

Never mind the cynics who say software generators have been around for years. We need more of this enterprise. We are always hearing how British products are great technically but badly marketed — now good it is to see men with real sales acumen at last.

Great stuff men! If you can convince the Daily Telegraph and the Daily Express you should have no trouble with the Japs, Americans and Germans, and Britain will be Great again!

"This is for the better class of customer."

Stranded

DO any of my readers in the vicinity of Berkhamsted happen to have a fork-lift truck? I ask this question because all OAP computer has been separated from its nearest and dearest (peripherals) for lack of such a device.

Bradford University has acquired the ancient Gamma 10 from Berkhamsted School after an appeal in Computer Weekly for a home for the machine. Dr Emmanuel Yannakoudakis is using the computer permanently. Apart a single-board micro of the same (4K) capacity to demonstrate the wonders of miniaturisation. The lorry, not realising that the CPU is so unmanageable, turned up at Berkhamsted with a practical to manhandle aboard . . . So the peripherals have gone to Bradford while the CPU sits forlorn, waiting for mechanical help.

Any gallant knights of the road around?

Chai

Still on its way . . . machine with a mind of its own

ARE the public and those who inform them really getting more clued up about computers than they were? I wonder. You may remember me ranting in January about the Design Council exhibition in which various cardboard mock-ups were shown as examples of wonderful new microtechnology. . . . robot vacuum cleaner . . . what it would look like . . . Yes indeed it would be nice . . . would also be nice if . . . to cure all diseases . . . believe in whether it should be . . . "a blue, round and oval? . . . So yes, it's silly, but does it really . . .

. . . when you first use it in a room, it memorises all the main objects . . . "If it has a built-in sensor to . . ." . . . vacuum cleaner with a mind of its own . . . asleep in front of the fire, the machine will simply clean round . . .

Look, dear Manchester Evening News, you have missed the minor point that the machine does not actually work. It is a gleam in the eye of two youths at North Staffordshire Polytechnic!

ComputerWeekly

Quadrant House, The Quadrant, Sutton, Surrey SM2 5AS

Thursday, March 19, 1981

Role of the unions

TRADE unionism is not generally strong in DP departments, for a variety of reasons. One is that computers have been adopted most readily in sectors like banking and insurance where unions are docile and employers have a strong streak of paternalism.

Chiefly, however, it is because computers have replaced usually non-unionised clerical jobs held by the meekest parts of the workforce — women and younger employees.

The fact that there has been no painfully-forged trade union tradition to buy out has in large measure allowed the benefits of computerisation to be rapidly earned. Subsequently a part of those benefits has gone to pay a new elite in the workforce — the computer programmer and his ilk.

He (and she) has been far too much in demand to need to worry about organising with colleagues to negotiate wages. In general he has found himself pushing at the open door of higher earnings to face an employer who has little option but to concede them.

The corollary is that in times of (relative) slump the programmer must not complain if his earnings growth slows, or if he cannot so convincingly threaten to take his coding skills elsewhere. He has no friend with a big stick — his fellows in a trade union — to do anything about it.

But what happens if the wages of a part of the programming community drop behind the levels achieved in comparable jobs elsewhere? And at the same time those programmers prove unable (or unwilling) to move and yet — crucially — are organised into trade unions to face an employer who is unwilling to concede the rises demanded?

This conflict of expectations and rewards is at the root of what has happened in the National Health Service, where staff at the regional computing centres worked to rule.

The main union involved, the National Association of Local Government Officers (NALGO), says its members need between £500 and £1,000 per person to meet their long-standing aim of parity with those doing similar jobs in the private sector. The NHS is struggling to stay in touch with its strict budgets and in no mood to meet the claim.

In the end, during the present action or after some future trouble, it will probably have to. When that happens it should resist the knee-jerk reaction and blame the extra expense on a big, bad union. The union in this case is simply reflecting what its computer staff members see as the realities of *their* market.

A willing tool

IT has been another bad week for industrial relations elsewhere in the public sector of our industry. Civil servants are up in arms at what they see as the government arbitrarily tearing up the agreed procedure for relating their wage levels to those of the private sector. And in the computer staff at the core of the state's tax-gathering and benefits-dispensing machinery, they have found a willing tool to do something about it.

In choosing places like Cumbernauld, Shipley, Newcastle and Southend for strike action, Civil Service union leaders show themselves well aware of two things: First, and most obvious, is the damage which can be wrought by interrupting the government's cash flow — as sensitive to the economy as a whole as a company's is to its wellbeing.

But second, and becoming more obvious, is the fact the government computer staff do not see themselves as civil servants. A mainframe is a mainframe is a mainframe, even though it nestles at the bottom of a Civil Service structure which at its top puts public duty as point one on its job descriptions.

The people running things at the coal face (an apt metaphor?) act like computer people first and civil servants a long way second. Their unions knew what they were doing in selecting them as the spearhead for industrial action.

1984 and all that . . .

THIS week's example of the strange things people say in the media about computers was sent in by John Hoffmann, of Handforth, Cheshire, who wins £5.

"Yes, you've got a modern kitchen to be proud of. So it grieves me to have to tell you that it's already as out-of-date as the hand-powered mangle and the kitchen range.

"Now, for instance, there are cookers which "look" at a piece of meat before deciding how long it should be cooked . . . some computers which scan the pantry shelves, decide what we're short of, and automatically order it from the local supermarket.

"And expect to see polishing machines which roam off around the house on their own looking for things that need a shine."

Stella Bruce in the Manchester Evening News

LETTERS

Renewed interest in Simula — a general purpose language

I WOULD like to dispel any misconceptions that readers may have gained after reading Dr Peter Wallis' review of Simula Begin (CW, February 19) that Simula is only a simulation language.

Simula is an advanced general purpose language. It is an extension of Algol 60 and, with minor exceptions, includes that language as a subset. The extensions lie in the class and co-routine concepts and the associated reference variables, together with fully defined text-handling, character and numeric editing, and input/output. It also has built-in list handling facilities.

The simulation facilities of Simula include a pseudo time axis, scheduling procedures, and random distribution sampling. Simulation programs may be written in any of the conventional styles such as Activity, Event or Process mode.

Dr Wallis mentions the influence of Simula on later languages, specifically Ada. Jean Ichbiah, the chief designer of Ada, is a proponent and an implementor of Simula! With all its "modern" concepts and its availability on most mainframes, why is Simula not very well known? The lack of suitable text-books, the complexity of implementation, and the promotion of Simula as a simulation rather than a general purpose language, are all possible reasons for this.

Over the last few years there has been a renewed interest in Simula. It is now being used in environments other than scientific: for example, the new computer-based budgeting system for the Swedish Defence Forces is written in Simula rather than the conventional Cobol/Fortran/Assembler mix.

As a result of increasing demand for Simula on new hardware (minis in particular), a portable Simula system is being developed. A Simula newsletter is published quarterly in English.

For further details about, and the availability of, Simula, readers should write to The Simula Group, Norwegian Computing Centre, PO Box 335, Blindern, Oslo 3, Norway.

RONALD G. C. PRINGLE
Computing Laboratory,
Newcastle University.

Good staff still hard to find

I MUST agree from personal experience with the view of Elizabeth Last (Letters, February 19), that, in spite of the recession, good staff at degree level are very difficult to find.

At the Systems Group within Liberty Life Assurance we are seeking some ten Fortran analyst-programmers, but even with good working conditions, interesting projects, and high salaries, our "prospect list" is derived from friends and colleagues of present employees rather than as a result of recent extensive advertising.

The lack of interest in new jobs is, not, therefore, confined to Brighton, for at New Barnet we are well within the North London catchment area.

Finally, some advice to those seeking employment: an application received direct by a prospective employer is worth many times more than any paragraph on a recruitment agent's list.

Dr IAN R. WHITE
Systems manager
Liberty Life Assurance Co,
Barnet.

Putting power with end user

CRITICS of APL in your columns, and elsewhere, tend to decry its character set, and often seem to regard the language as some sort of deviant flash in the pan. The letter from James Sinclair (CW, February 19) puts forward a bevy of good points, to which I would like to add a couple.

Firstly, to counter the "new toy" view, it is perhaps not widely realised that mainframe APL time sharing has been available in the UK in some form for around 15 years, nor that world-spanning packet switched networks also have a respectable history, some of them being totally APL-dedicated. Furthermore, just about every manufacturer of hardware has found it desirable to offer some sort of APL, right down to desk-top machines.

Secondly, the APL character set may be seen as a successor to the notation traditionally used for algebra, just as Arabic numerals succeeded Roman (have you ever wondered why the Romans never developed calculus?).

If you look at the mathematical expressions in a scientific, economics or actuarial publication, what do you see? Greek symbols, diacritics, superscript and subscript numbers. No wonder no-one designed the standard keyboard for all that.

APL covers the same ground, but with characters in a straight alignment, and it is completely clear and consistent to the eye of man and machine alike. To achieve the same with other high level languages one needs cumbrous lines, and often acres of looping.

APL was first conceived as a notation system for people; only later was it decided to turn it into a computer language. It puts the power and productivity into the hands of the end user, with minimal dependence on the traditional DP priesthood.

S. P. B. DURNFORD
Eindhoven,
The Netherlands.

Software's top ten

IN your Software Special (CW, February 19) you included a table of the top ten suppliers of packaged software revenues.

You should know that our specialist banking and insurance systems company had revenues of \$2.9m in the UK and of \$3.41m in all of Europe during calendar 1979. In the league table this places BIS Software Ltd as the fourth largest package software supplier in the UK and clearly in the top twenty throughout Europe.

It is noteworthy that the largest UK package software companies are oriented towards application rather than systems software and that the top three, Peterborough DPS, Hoskyns and BIS Software have all specialised very considerably and over a long period on a specific application sector.

In the 70s, systems software providers were the major contenders in the international package software market. The trend is now established that in the 80s there will be less growth in the systems software area and growing emphasis on application software, particularly industry specific software for use on mini and microcomputers.

ROGER GRAHAM
Chairman
BIS Software Ltd,
London SE1.

The Editor welcomes letters commenting on subjects published in Computer Weekly, or on original topics. All letters must be accompanied by the writer's name and address, not necessarily for publication. Letters may be cut.

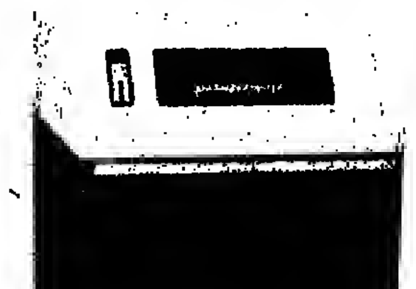
Liveware File

by Don

Cable & Wireless UK Services Ltd

EX-STOCK

Centronics



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Mate means no more noses to grindstone for disabled programmers

by Pamela Rowe

Geoff Busby demonstrates Mate II to Jnhia Schofield, chairman of the BCS Committee for the Disabled, and Kn Aston, England chairman of the International Year of Disabled People.

THE Computer Weekly Ball of 1977 wasn't just a good time for all; it also sponsored a project to help the disabled – Mate II, a microsystem which can be operated by one digit, be it toe, finger, or nose, and which can also control the domestic environment, drawing curtains, opening doors and switching on lights.

The Mieroprocessor Aasisted Terminal Equipment project, in full, all started onnbtruoively enough, as these things do, with a girl student at Essex University. Margaret Pearce was disabled and could only use a pen in her mouth. To help her, the computer department designed a light-touch keyboard for the teletype equipment they already had.

En route to this Brian Wilby and Martyn Lankester, the original members of the Mate project group, heard of a similar case at the Kelvedon Day Centre and paid the centre a visit.

Here they met Geoff Busby, a programmer/analyst with Marconi in Chelmsford, who had an "operational nose", and who was attached, via a lever to an arm, and a spring to a teg, to a Heath Robinson mechanical device.

His nose was obviously taking quite a strain and as Wilby said, "we could see that poor Geoff's nose was getting very red, and we felt sure we could do something better for him."

They produced, in fact, the light-touch keyboard with facilities for sequential rather than simultaneous operation of the control and shift keys. The key is effectively "remembered" by the processor and is applied only to the key immediately following. The team had already worked out that the majority of control/shift operations are used for one character only.

This was the point at which both Computer Weekly and the British Computer Society became involved – through Busby's participation in the BCS Committee for the Disabled – and when Mate I became Mate II.

Mate II was to be an intelligent version of its predecessor with enhanced word recall and editing facilities. Despite the entirely voluntary services of the group, given freely in their spare time, the project now needed money, and the ball raised some £1,500 to be administered by the BCS.

The initial design, completed in 1978, called for custom-made software under a specialised operating system, since at that time there were no suitable packages available. The Mate group accordingly enlarged to include Dr R. G. Biske and Michael Coad, both of Essex University, and M. Langton from the Gilberd School, Colchester, advising on the ergonomics of the equipment.

But there it stopped; and there was a long hiatus while everyone tried to sgree on how the money should be spent. Meetings were held aod committees called, the slow business of bureaucracy taking over. More important to the project group was the official go-ahead necessary to further work on Mate ff.

Meanwhile back at the computer industry, technology was changing fast, and in the event, the delsy proved an advantage. When, last summer, Mate II was on again, proprietary micro systems had mushroomed and o ready-made operating oyatem was available in CP/M.

Then things started to move fast. The Westrex Corp when approached by Busby for a discount, donated one of their model 43 printers and in a matter of months Coad had written a set of programs in Assembler to run on any system under CP/M. In fact since the university has standardised on Vector Graphic equipment, the prototype Mate II is on a Vector Graphic MZ based on the ZX80.

All along, Essex University has supported the project with encouragement and facilities.

The group had long since determined that 80% of disabled people can use one finger, toe or other appendage. They aimed to fill the gap between the sophisticated and expensive breath or sound control machines and the standard oble user. Psychologically an important point is that both the able and disabled use the same equipment – a single switch operates the modification.

Mate If was designed ss a computer terminal or word processor but can also be used as a free-standing micro with word recall facilities.

As well as the light-touch keyboard, and the sequential operation of multiple keys, the word recall function can present stored blocks nf information at the touch of a single key, reducing the number of depressions by two-thirds. These may be addresses, phrases, standard letters, program subroutines, or anything that can be pre-set.

The word store on the prototype is arbitrarily set ot 50K, but this could be 100K or 150K as desired. Each store con contoin roughly as many individual blocks ur phrases as there are printing characters on the keyboard – approximately 5K-bytes of space.

Word tobles not in current use can be stored un a magnetic disc, giving almost limitless capacity, and insertion and editing facilities allow for tailor-made tables to suit a particular task. Mate recognises the first word of a sentence from store, promoting the leading letter to upper-case, and takes care of line wrap-around.

Domestically, Mate is u real friend and would be oppreciated by even the merely tired. It can be set to draw curtains, turn lights on and off and open and shut doors.

Eight lines or functions ure normally nvailnble, at un extra cost of £20 for each activation, but a staggering 256 sucketo are possible if needed.

And so far they've used none of the money!

Now that the prototype is finished the plan is to use the funds to produce a demonstration model, by buying their own Vector Graphic, which Busby can demonstrate to interested parties.

Said Dr Blake, "If there is sufficient interest we would like to form out the complete package to a manufacturer for large-scale production. If demand is smaller then we could go into limited production ourselves. It takes only two weeks to modify the standard model, and the software is simply 'copy a floppy'."

Present cost of Mate II varies with the hardware. If based on the Vector Graphic B it works out at about £2,500, including Microp-olis 5¼in floppy disc drives with capacity of 315K for 630K if doublesided) screen and keyboard. The cheaper version costs about £1,500.

The main aim of the project group is still to help the disabled to be less apart from his fellow workers – they call Mate II "an aid to job opportunity".

They see it as helping the programmer with practical problems, the disabled businessman to cope with his documentation, and the disabled child to keep up with his peers in the classroom, despite a mechanical handicap.

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Confusing world of telecoms

VIDIOTHX, Viewdata, Oracle, Prestel, Ceefax, Viewtron . . . Do they all whirl in a communications vortex, in which the only clear fact to emerge is that telephone boxes will be painted yellow? If so, stick close, and hitch a lift on the guide to telesoftware.

The generic name is videotex, which can be broken down into teletext – broadcast material with serial access; and viewdata – telephone linked and allowing random access. In the teletext category are Oracle and Ceefax, both of the UK, and Antiope from France. Viewdata includes Prestel (UK), Viewtron (US); Telidon (Canada), Captain (Japan), Telset (Finland), Viditel (Netherlands); and Bildschirmtext (West Germany).

The three UK systems, Ceefax, Oracle and Prestel, have all been used quite extensively to support education. Apart from a little collaboration on special projects, Ceefax backs up BBC programmes, like Exploring Science for schools, and Merry-go-round, while Oracle is the Independent Broadcasting Authority version, used mainly for adult education.

Two of its programmes are Make it Count and Numbers at Work. Development of Oracle is concentrated on its role in retrieval. A project is afoot, sponsored by the Council for Educational Technology and the Department of Industry, to broadcast computer-aided learning programs within the Oracle framework for downloading into a remote intelligent TV set.

Prestel is organised by British Telecom, which insists it is simply the common carrier of data. Three other groups involved are the data originators, which can cost them more than peanuts; the television manufacturers, so far a little slow with their production of suitable sets; and the users, currently shnut 8,000 of whnnt have become the modern pioneers of the telephone.

The Counell for Educatinnal Technology has set up an umbrella service near London to help educational institutions and slightly buffer against the high charges. Some august names are cooeealed by this umbrella – the National Extension College, Schools Council, British Universities Film Council, Business Education Council, National Federation for Educational Research, the Technician Education Council, the National Audio Visual Aids Centre and the Council for National Academic Awards.

The umbrella provides a mini as an update terminal for editing frames on to the system, and a floppy-based micro for research into intelligent receivers.

Information retrieval is also catered for and data is held on course guides, entrance requirements, grants available, and books, films and aids which can be obtained.

A form of interaction is possible using a response frame facility. Theoretically one could sit at home and select, enrol, and even pay for the evening class of your choice without ever opening the door. Pity the same doesn't apply to the class on those cold, wet November evenings. The facility is expensive on frames, though, and has had only limited use.

The commendable policy of British Telecom is to concentrate on spreading Prestel in its simple form as far and wide as possible before providing more advanced facilities. However, other projects are already under way in UK, mostly sponsored by micro companies or educational institutions.

An in-house viewdata system for a micro has been perfected by the Council for Educational Technology on the Research Machines disc-based 380Z. Applications in the school could include timetables, menus, sports figures, school council notes – anything needing to be disseminated.

Electronic overhead projectors are on the way, using frames recorded on to cassette or floppy, offline as required during the lesson.

An endeavour which might perhaps have a more immediate effect than any other, would be the co-ordination of software written exclusively within each institution, and often duplicated throughout the country. Most local authorities offer no software distribution service, and schools are working in complete isolation.

The UK National Development Programme for Microelectronics in Schools and Colleges may be used to establish a national network and would include, besides programs, data and documentation which together account for up to 90% of the effort.

PUZZLER

TRY this one in your head. It's quite easy – but particularly appropriate for this column because, by a coincidence, the figures involved are just right for me and my teenage son.

In the year 2000 my age will become a perfect cube, and that of my son a perfect square. Several years ago the reverse was true – my age was a square, and his a cube.

How old are we on our respective birthdays in this year?

See page 45 for solution.

by Paul Fisher

DP people remain in front in pay stakes

FOR the purposes of compiling two salary surveys a year, Computer Economics (CEL) of Kingston, Surrey has devised 41 job categories for data processing personnel – 50 counting those in data prep.

"I wouldn't scoff at the number of levels so long as they are related to a management structure," says CEL's Peter Steveos.

"DP people have to be fitted into a separate salary structure" – and that means more money for those in DP than those who work elsewhere.

Our wallets are safe because, according to Steveos, there are "too many jobs chasing too few people."

CEL's publicity blurb puts it this way: "Many manageeots are faced with an uousual personnel situadioo when considering their data processing department. There is an swareness that salaries in DP tend to be higher, age for age, than those we are accustomed to in other departneots, and that the need to utilise equipment iotensively introduces patterns of shift work and overtime oot previously experienced in white collar environments."

Table 1 is the more crowded of two sample DP hierarchies which Stevens shows to clients about to join in the salary survey.

"Titles," acknowledges Stevens, "are confusing." Therefore each title is accompanied by a job descriptioo so that installations like the Civil Service, which retain non-DP gradings, cao fill in the survey questionnaires.

The table illustrates a trend for operations to become iovolved with systems work. Stevens has found increasingly that the categories described as senior operations analyst and operations analyst are filled by senior operators and shift leaders when they come off shift. It provides a way of stepping up a rung aod of leaving shift work without a drop in income through loss of shift allowance.

According to CEL's so-called "capsule job descriptions" a senior operations analyst is "responsible for the provision of operational and productioo support, responsible for co-ordioatiog systems testing and production job streams and ensuring that operating instructioos, back-up and housekeeping procedures follow the installation standards; normally responsible for the allocation of space on operational disc packs, may report to either technical support or operations manager."

His minion, the operations analyst is defined as a "troubleshooter" who "would normally have in-depth operating experience, probably to senior operator or above." CEL assigns these two categories to technical support rather than operations and groups them with three network grades and a hardware and technical planning analyst.

This bod is "responsible . . . for the planning and control of the evaluation, acquisition, implementatioo and tuning of all hardware and software." The person who can cope with that many syllables can cope with anything.

The title of hardware and technical planning analyst is one of which Steveas warns: "Treat with caution."

The growing list of job titles reflects what is happening in installations and new ones are added wheo the existing categories are not specific enough.

Sometimes a job title is created when the job defined, perhaps for a promotion or for moving someoae sideways, closely relates to the work being done. For Stevens it only becomes a "real job title" when the job is defined and someone has to be recruited to do it.

CEL is the clear winner in Op Spot's tally of job categories. Fifty grades must be enough to handle anything.

No matter that many sites don't have that number of employees – I know plenty of ops who would be happy to take home the pay for a couple of extra grades.

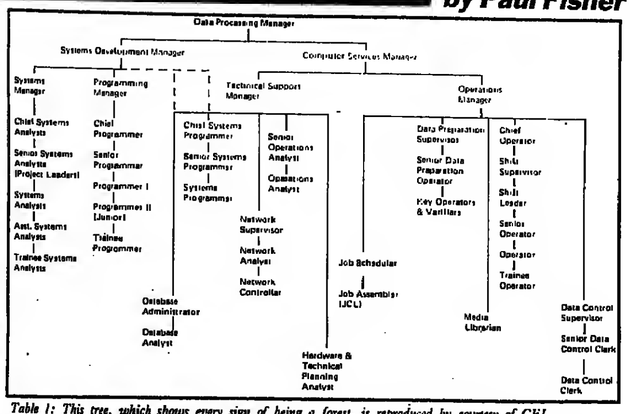
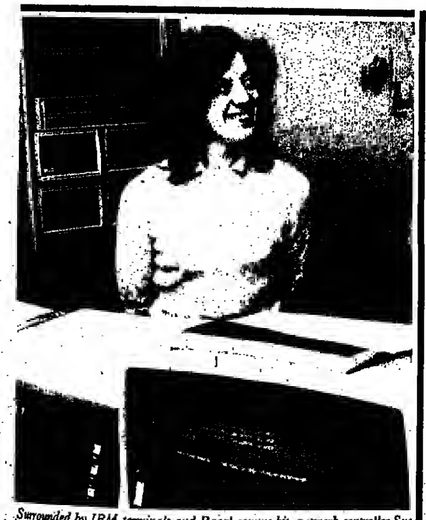


Table 1: This tree, which shows every sign of being a forest, is reproduced by courtesy of CEL.



Surrounded by IBM terminals and Racal comms kit, network controller Sue Wright says: "The fact that I used to be an operator has helped me."

Sue keeps the users sweet

SUE WRIGHT has been network controller at May and Baker's Dagenham site since last summer. Previously she was with the company as personal assistant to the commercial services manager so she knows "a lot of people" who work well away from DP. Before joining May and Baker, Sue was an operator with National Westminster, but says: "I'm not telling you how long ago that was."

She looks after "at least 100 screens", most of which are scattered around May and Baker's chemical manufacturing and administration complex. The remainder, all online, are in four other UK sites – eight terminals in Norwich, two each in Ongar and Brentwood and one in Dudley.

The network used to be the responsibility of operations section head John Bines but he handed over to Sue. She has been on one course with Infotech and will be attending a Racal course soon. The site has had Racal modems for over two years.

Sue reckons that her experience in other sections of the company has been valuable because some of her job involves keeping bemused users sweet when things "blow up." The job takes her to Norwich once a month "depending on circumstances" and to the other UK sites perhaps four times a year.

She puts in some overtime but never does shifts.

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DATA ANALYSIS

Beginning database design using information collected

Section II – Part 2

of our series describing a system design methodology

by Rosemary Rock-Evans

IN Part 21 we started to look at how the results of analysis could be used for system and database design. Aspects of application system design were discussed, and as a result of this stage a sub-set of the functions was selected based on the frequency of the functions, their importance, mechanisms required, response required and other cost/benefit criteria (function filtering).

This week the sub-set of functions will be used to consolidate the information collected so far during the analysis stage and the resulting information used for database design.

In Figure 1, a form called the attribute usage matrix is shown. This is the last data collection which is required from the analysis stage and shows the attribute types used by the functions.

The information on this form indicates the pattern of usage of attribute types, and can pinpoint inconsistencies, e.g. Date of Discharge appears to be stored but never used. It also shows the sub-schema required for each progmm implemented using the function.

During access path analysis, estimates of data usage were collected on the access path for a Function Form. Each line on this form represents information on "Element Usage".

In Figure 2 an entity model of the entity types used in data analysis is shown. Relationship types, entity types and attribute types and values are regarded as sub-types of some overall entity type which will be called "element type" for the purposes of this discussion.

Element usage is thus the function's use of an entity type, relationship type, attribute type or attribute value (the information on the Attribute Usage Form provides a function's use of an attribute type). In Figure 3 the example showa the possible contents of the element usage entity type.

This information is summarised for the purpose of database design to give data on the volumes of an element which are used by the functions which will form the application. These volumes are known as the "activity on the elements". In Figure 4, some of the attribute types which describe the elements, function and element usage entity types are shown and the activity nttribute types marked.

Entity type:– Patient	Attribute usage						
Function / Attribute types	Admission	Nurse's inquiry	Discharge	Record patient's death	Record patient's birth	Doctor's inquiry	
NHS number	R	R	R	R	S	R	
Sex	R	R			S	R	
Date of birth	R	R			S	R	
Marital status	R				S	R	
Hospital status (In-patient/out-patient)	M	R	M	—M	S	R	
Date of death				S			
Time of death				S			
Date of discharge			S				
Date referred							
Surname	R	R	R		S	R	
Title			R				
First name	R	R	R		S	R	
Second name		R					
Maiden name						R	
Ward status (booked, resident, null)	M		M		S	R	
Cause of death				S			

R=Retrieve S=Store M=Modify D=Delete

Figure 1. Attribute usage matrix.

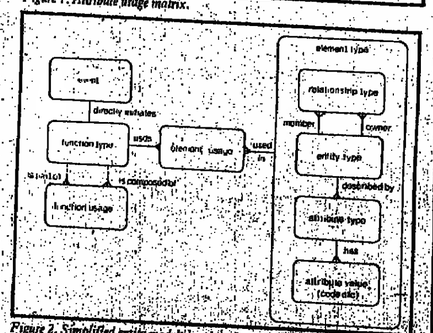


Figure 2. Simplified entity model showing element type usage.

Function type	Element type	Category of element	Action	Volume
Function Death	Patient	E	R	10
	Patient undergoes operation	R	R	50
Death	Operation	E	M	50
Death	Sex	A	R	10

Figure 3. Element usage.

In Figure 5 a descriprion of how accesscs on an element are calculated is shown as a "structured English" description. It should be self-explanatory. The results – Patient retrieved 700 times per day; Operation stored 5 times per day; "Patient undergoes Operation" retrieved 200 times per day, etc – are logical accesses and must be converted accordting to the DBMS being used to obtain physical accesses.

All this information is now available to begin design.

Working from the eotity model, there are several options open to the dnabase designer. The main ones are given below:

I. Entity types.

1.1 An entity type can be represented by a single record type.

1.2 An entity type can be split into sub-types and record types created for each sub-type.

1.3 An entity type can be split to form two or more record types, each with different attribute types.

1.4 The entity type is not implemented using the DBMS. It becomes a transaction file, a conventional file or even the working storage of a program.

1.5 The entity type is not implemented.

1.6 Entity types are grouped to form one record type, e.g. Order and Order Lines, with Order Lines as repeating groups within the Order record type.

2. Attribute types.

2.1 An attribute type is represented by a data item.

2.2 An attribute type is represented by more than one data item (i.e. duplication for efficiency reasons).

2.3 An attribute type is not represented within the DBMS – it becomes the working storage of a program, part of a conventional file, etc.

2.4 An attribute type is not implemented.

3. Relationship types.

3.1 A relationship type is directly represented by one DBMS link or Codasyl set. *(Dependent on 1.1)*

3.2 A relationship type is split according to the different entity sub-types into more than one DBMS link or Codasyl set. *(Dependent on 1.2)*

For example, Patient undergoes Operation could be implemented using two links, Patient booked in for Operation, and Patient has undergone Operation.

3.3 A relationship type is not implemented. *(Dependent on 1.5)*

3.4 Several relationship types are implemented via one DBMS link or Codasyl set. The different relationship types are identified either using different record types or by an identifying data item.

3.5 The relationship type is implemented by using the identifying attribute type of the owner in the member record type. For example, Patient Key (NHS no) in the Operation record.

3.6 A relationship type is implemeoted using an additional record type or link (dependent on restrictions of DBMS).

What criteria does the datsbase designer use to decide how to map the entity type, attribute types and relationship types into records, links, and data items?

Some of the points he/she should consider sre listed below:

a) Confidentiality/privacy.
b) Security requirements.
c) Volume of elements.
d) Response required, e.g. online, batch, etc.
e) Degree of relationship type (e.g. if fixed degree, may do 1.6).
f) Life of element, i.e. how long is it required in the system?
– One function
– One transaction
– More than one transaction
g) Criteria used for selection of element. This may result in secondary indexing being required.
h) Priority of functions.
i) Patterns of element usage – which elements are used by the most important and most frequent functions.
j) Frequency of use of elements and groups of elements:
– Not used
– Used frequently/infrequently
– Elements are used very frequently because of high volume of traffic.
k) Patterns of element recurrence, for example, which attribute types may not be present for all the entities of a certain type (may result in 1.2).
l) Consistency.

Whnt information is available on which to base the decision on how to map the entity types, attribute types aml relationship types to record types, links, data elements, etc? The information collected is listed below:

1. Function Forms.
2. Entity Type Forms.
3. Attribute Type Forms.
4. Relationship Type Forms.
5. Element usage (Access Path for o Function and Attribute Usage Forms).
6. Summary of element usage.

Examples:

1. Which attribute types are confidential?
– Use the Attribute Type Form. The result may be a split of attribute types to form two record types (1.3).
2. Which relationship types are of fixed degree?
– Use the Relationship Type Form. The result may be that the entity types are grouped to form one record type (1.6).
3. Which attribute types are not present for all entities of that type?
– Use the attribute type Form and Entity Sub-Type Forms, e.g:

Entity type: Nurse.
Attribute types: Name, Date of Birth, Staff Number

Population: 600

Entity sub-type: Matron
Aatribute types: No of years as matron, Assessment Mark, Promotion Grade

Population: 50

Therefore 550 records could have the Matron attribute types as empty fields. If the DBMS allows only fixed length records (and many do), this is a waste of space. The result may be to split the entity type into two record types, Nurse and Matron.

This series is about how the results of analysis can be used for design – it is not possible to show all the options open to database designers under all circumstances. Database design is a complex and sophisticated technique, which involves weighing up all the options made available by the DBMS against the requirements and the restrictions such as hardware, etc.

In a following article the restrictions imposed by some of the different available DBMSs will be looked at as a function of structure and opportunities for access.

The Data Analysis methodology was developed at CACI by Ian Palmer.

Entity type	Attribute type	Abbreviated name
Function	Function name	F–NAME
	Synonym of function	F–SYNM
	Function definition	F–DEF
	Average frequency of function	F–AFREQ
	Average frequency of function timespan (e.g. per day, per week)	F–AFTIME
	Growth of frequency of function (e.g. 2%)	F–GROWTH
	Maximum frequency of function	F–MFREQ
	Maximum frequency of function timespan	F–MFTIME
	* Maximum frequency of function in days	F–MFDAYS
	* Average frequency of fuoction in days	F–AFDAYS
	Response required	F–RESPON
Element usage (Access Path for a Function Form Line)	Action type (R,M,C,D)	ACTION
	No. of elements of that type acted on per function and by action type	VOLUME
	* Total average no. of elements acted on by function by action type per day	TOTAFUN
	* Total maximum no. of elements acted on by function by action type per day	TOTMFUN
	Category of element	TYPELM
Element	Name of element	E–NAME
	Definition of element	E–DEF
Activity on elements	* Average no. of elements retrieved per day	AE–RETRD
	* Average no. of elements modified/transferred per day	AE–MODD
	* Average no. of elements stored/created/connected per day	AE–STORD
	* Average no. of elements deleted/disconnected per day	AE–DELTD
	* Maximum no. of elements retrieved per day	ME–RETRD
	* Maximum no. of elements modified/transferred per day	ME–MODD
	* Maximum no. of elements stored/created/connected per day	ME–STORD
	* Maximum no. of elements deleted/disconnected per day	ME–DELTD
	* Confidentiality status	ME–CONF

* = Derived attribute (1.6)

Figure 4. The entity types and attribute types of data analysis.

```
Previous function {
    DO WHILE Element
        Set AE–RETRD, AE–MODD,
            AE–STORD, AE–DELTD,
            ME–RETRD, ME–MODD,
            ME–STORD, ME–DELTD to zero
    ENDDO

    DO WHILE Function
        Convert F–AFREQ to days using F–AFTIME to
                give F–AFDAYS
        Convert F–MFREQ to days using F–MFTIME
                to give F–MFDAYS

    DO WHILE Element usage
        Find element using "Element Usage used
        by Element" relationship
        Multiply F–MFDAYS by VOLUME to
                give TOTMFUN
        Multiply F–AFDAYS by VOLUME to
                give TOTAFUN

        CASE 1 ACTION=R
                Add TOTAFUN to
                AE–RETRD
                Add TOTMFUN to
                ME–RETRD
        CASE 2 ACTION=M
                Add TOTAFUN to AE–MODD
                Add TOTMFUN to
                ME–MODD
        CASE 3 ACTION=C
                Add TOTAFUN to
                AE–STORD
                Add TOTMFUN to
                ME–STORD
        CASE 4 ACTION=D
                Add TOTAFUN to
                AE–DELTD
                Add TOTMFUN to
                ME–DELTD
        CASE 5 ACTION=OTHER
                ERROR!
    ENDDO
ENDDO
```

Notes: Action types = R=Retrieve
M=Modify or Transfer
C=Create or Correct
D=Delete or Disconnect
CASE=Multiple 'IF'

Figure 5. Calculating the summary of accesses to an element.

Industry 'voice' in EEC restructured

THE Association of the Europesn Independent Infarmatics Industry (EIII) bas restructured its executive board. The association was formed in January last yesr, to promote the interests of small snd medium-sized European manufacturers af data processing equipment, and to provide a voice for industry in dealings with the EEC Commission and other international bodies. It has over 70 member companies.

Dr Antonius Helmer, former president of the Association, has been elected an honorary counselfor. He is replaced by Jean Maillet, who in 1951 founded the Société Intertechnique and is president and managing directror of ir. He was the first president of CII, is a Commander of the Legion of Honour snd president of the French Society for the Protection of the Environment.

Other members of the board are: Executive vice-president Donald Willis (representing the UK), who is business development director of Data Recording Equipmeot and governor of Christ's Hospital; vice-president Peter Sorenson (Denmark), president of RC Computer; treasurer John Cordier (Belgium) president of Telindus; Peter Dietz, president of Dietz Computer Systems and Johannes van Eybergen (Holland) an executive of Philips in Holland.

■ Paul Arthur has joined Compeda as new business manager. He was previously head of the mathematics and computer applications department of International Research and Development.

■ Roo Burnip is now European marketing manager at AMI. He joined the company in 1976.

■ Ken Olisa has been appointed VS marketing manager at Wang. He was formerly Series 1 product manager at IBM.

■ Miebael Lyona bas been appointed managing director of Datema. He joins the company from SPL International where he was director responsible for the Scandinavian area.

Forester

Pritchard

■ Terry Forester has been appointed Northern Region sales manager at Package Programs Ltd (PPL). He was formerly with ICL. Also joining the company is Mike Pritchard, who comes from Kalle Infotec as sales executive responsible for the West London and Middlesex area.

■ Robert James, vice-president and treasurer of NCR, has been appointed vice-president of office systems for the company.

■ Jim Turner has joined BA Electronics as sales manager. He was formerly with Consort Electronics.

■ Alastair Day and David Stark have been appointed leasing executives at Oceanic's finance division. Before joining Oceanic, Day was leasing manager for British Rail Services and Stark was sales executive with Systime.

Clardige

Hadfield

Hughes

Dalgarno

Top appointments at Computer Resources

THREE new appointments have been made at Computer Resources. Kevin Hughes joins as director for the London branch. He was previously director responsible for mainframe software products at CAP-CPP. His computer career started in 1962 with the Ministry of Defence. He also spent three years with Jeffrica and Hill as consultant chief programmer.

Joining the Manchester branch of the company is small business systems monager Barry Hadfield. He gained his early experience in the industry with Ferranti, where he worked for 10 years.

John Clardige joins as a consultant in the Leeds office. He was previously technical manager at Data Sciences and gronp production msnager or KBS Computer Services.

■ John Tregurtha has been appointed specialist sales executive at Rair, concentrating on OEM customers for the company's Black Sox range. He was formerly technical consultant with CAP.

■ Tony Middleton bas been promoted from operations msnager to commercial manager of the commercial systems division of Host (Hooper Systems and Technology).

Director for FTS

A DIRECTOR has been appointed at Future Tcefnology Systems (FTS). Fred Dalgarno has considerable experience of business at board level, and is director of Balgownie Properties, Castle Forbes Golf and Country Club, Melville Sireet Investments, Thorngrove Investment Services and Amstcel Group, of which he is chairman.

He graduated from Aberdeen University as Bachelor of Law in 1964 and in 1965 went to Strathclyde Universiiy where he gained a Diploma in Industrial Mansgement. During the next three years he served his apprenticeship as a chartered accountsnt in Aberdeen. In 1968 he joined Paull and Williamson, solicitors and estate agents, later becoming a partner in the firm.

■ Andrew Mayo has been appointed personnel manager at Datskill. He was previously sales and support personnel manager for ICL's UK Division at Putney.

■ Tony Kinsella has joined Office Tecbnology as financial controller. He was previously with ICL.

DIARY

MARCH 24

Demonstration of OCLC services. BCS Scottish Online Users Group. Stirling. Details from Lindsay Corbett, University of Stirling.

Microcomputer standards. BCS West Herts branch. The Watermeet, Riekmansworth, West Herts. Details, Gary Freeman on (0234) 65121, ext. 218. 7.30.

Why should anyone bother to join the BCS? BCS Wolverhampton branch. Room C7, Wolverhampton Polytechnic. 7.00.

MARCH 24-27

Computex Ireland. SDL Exhibitions. Leopardstown Exhibition Centre, Dublin.

MARCH 25

IBM – The New Generation of Small Computer Systems. IDPM Sheffield branch. IBM offices, Crossgate, Leeds. 7.00.

Microprocessors for text processing. BCS Medical (Northern) Group, York.

CMC Reality Sub Group meeting Gestetner Ltd, Euston Road, London. 10.00.

MARCH 25-26

Data logging teach-in. MC Computers Ltd. MC Computers, Newbury Engineering Facilities. Details from Steve Metcalfe on (0635) 44967. 10.00.

MARCH 26

Computer assisted systems analysis. BCS South Yorkshire branch. Physics Lecture Theatre 1, Hicks Building, Sheffield University. 7.30.

MARCH 31

Silvanus P. Thompson lecture, The Changing Screen IBA. IEE. The College, Regent Circus, Swindon. 2.00 and 7.00. Tickets from D. Bateman, Square D Ltd, Cheney Manor, Swindon SW2 2QG.

Micros in education. BCS. BCS HQ, London. 2.00.

APRIL 7

Meeting. Gino Users Group. Computer Centre, Mathematics Building, Bristol University. 10.15.

APRIL 9

Meeting. IBM Guide Set Group. IBM, Basinghall Street, London EC2. Details Alan Peck, tel: 01-828 8104.

APRIL 14

Does the Chip Mean the Chop? BCS Merseyside branch. Faculty of Science Lecture Theatre, Liverpool University. 6.00.

APRIL 14-16

Second London Computer Fair. Association of London Computer Clubs. North London Polytechnic. Details 01-607 2789.

APRIL 29

Experience with new database products. BSC Database Specialist Group. Room G6, New Engineering Block, University College London. 200.

CONFERENCES

■ THE West Centre Hotel, London is the venue for this year's World Pet Computer Show, to be held from June 18-20. On display will be the latest software and hardware enhancements and applications for the Commodore Pet, many contributions coming feom Pet dealers abroad. Organised by Commodore, the exhibition is opeo to the public on June 18 and 20, the middle day being reserved for trade only. The organiser plans to highlight the show with the launch of a new product. There will also be a series of seminars. For further information contact Business International, 1-3 Old Compton Street, London W1. Tel: 01-734 2907.

■ STORAGE Technology is holding two free morning seminars for existing clients and other IBM mainframe users, to give an idea of the company's future plans, its thoughts on expansion of the disc, tape, memory and printer markets and its plans for Europe. A buffet lunch will be provided. The seminars take place at the Ladbroke Dragonara Hotel, Teesside on March 24 and again at the Ladbroke Dragonara Hotel in Leeds on March 25. For further information, contact John Osbaldeston on (0372) 67041.

■ A conference entitled Article Numbering – The Future is Now, organised by the ANA (Article Number Association), will be held at the Queen Elizabeth Hall, London on March 26. There will be a report on the electronic invoice trials instigated by the ANA, and papers on the use of article numbering as a common language for suppliers and distributors. Recent techniques and developments such as the coding of books, periodicals and records will also be reported. There will be an examination of progress in the UK and abroad, and a description of the benefits of obtaining detailed sales data for retailers and manufacturers. Fee is £50 for members of the ANA and £60 for non-members. Prices do not include VAT. Details from the conference administrator, Communications Strategy Ltd, 25 Bedford Square, London WC1. Tel: 01-637 7961.

THE INTERNATIONAL COMPUTING SYMPOSIUM

ICS 81

The sixth ACM European regional conference in cooperation with Computer Communications and Microprocessors and Microsystems on

SYSTEMS ARCHITECTURE

March 30, 31 & April 1, 1981

The Institute of Education, University of London
London, England

The primery goal of the symposium is to report on the state of the art and to foster tha exchanga of ldaas among scientists, computar professionals, enginaars and managers on problems, new techniques and trands of "Systams Architecture." Like its predecessors tha symposium will be tha foremost platform world wida for presantations and discussions. At this symposium topics under discussion will be tha significant davelopments in the important and rapidly expanding area of Systems Architecture.

The line up of distinguishad session chairman, invitad speskers and authors totals 76. They ara well-known in their specialist fields and are of international reputa. The 60 papers presentad were selected from over 160 submissions to giva a balanced and authoritative overviaw of the subject.

Topics to be discussed will include:
Distributed architaoture
System specificetion and requirements.
Communications
Man/machina interface
Fault-tolerant systams
Tools and management information and system management
Software and systam architecture
Microprocesser and microprogramming
Language design
Deta base architacture
Analysis and construction of larga systems
Deta flow architacture

For full details write to Christine Jones Conference Administrator, IPC Conferences Ltd., Surrey House Throwley Way, Sutton, Surrey SM1 4QQ England Tel. 01-643 8040, Ext. 4890

The Dasher G300 graphics display terminal from Data General.

'Dasher' graphics display terminal makes its debut

THE Dasher G300 graphics display terminal from Data General has intelligent graphics, extended alphanumeric capabilities, and compatibility with existing Dasher display terminals.

A Graphics Command Interpreter (GCI) executes English-like high-level graphics commands for relative and absolute positioning; plotting lines in polar and cartesian co-ordinates; plotting arcs and straight lines; defining line style patterns; drawing solid rectangles and circles; filling any closed shape; defining graphic macros and drawing text in a wide variety of formats.

On power up, the Dasher G300 performs an internal self-test. If no problems are detected, the terminal goes online, permitting communications with the host Data General computer. Any detected errors cause a corresponding diagnostic message to be displayed.

After normal power-up, an operating system output command loads the graphics microcode into the terminal from the host system. The terminal verifies the GCI's integrity during loading.

Two modes of graphic operation are selectable. In the abbreviated command mode, graphics commands are standard Dasher terminal control-code sequences, permitting their use while displaying ASCII characters as a conventional alphanumeric display.

In the mnemonic command mode, graphics commands are English-like character strings, such as Line and Circle, which are then converted to control. This mode allows program listings to be easily read and understood and permits graphics programming in almost any computer programming language. In mnemonic mode, since all ASCII character strings are interpreted, normal text is plotted with a special text command.

Contained within the GCI is a complete library of the lines needed to draw all the characters supported by the G300 in alphanumeric terminal operation mode. The user can also define an additional set of characters.

Also, during program execution, the G300 can "trap" graphics commands containing errors. In this Error Trap mode, a detected error causes an error bell to sound, output to the terminal is halted, the command is displayed in a command view window at the bottom of the screen, and the terminal is placed in a Single Instruction Execution (SIE) mode.

Text character sets contained within the G300 are US ASCII, English, French, German, Spanish, Swedish and Danish. The keyboard determines the native character set of the display. In addition, all character sets are software-accessible at all times.

The keyboard includes a typewriter-style main keypad, 14-key numeric keypad, 15 program function keys, and 5 local function selection keys. A parallel printer port provides connection with a slave printing device.

An asynchronous interface communicates with any host Data General computer at speeds up to 9600 bps. Both RS-232 and 20ma current loop interfaces are provided.

The Dasher G300 costs £2,435.

Data General (CW), Hounslow House, 724-734 London Road, Hounslow, Middlesex TW3 1PD. Tel: 01-572 7455.

COMPEC EUROPE '81

MAY 5-7 1981

EXHIBITION – BRUSSELS

SPECIAL TRAVEL ARRANGEMENTS

COMPUTER WEEKLY in association with COMMERCIAL TRADE TRAVEL LTD., has arranged special trips to Compec Europe Exhibition in Brussels. Accommodation has been reserved at the SHERATON Hotel in Rogier Place, opposite the fair grounds.

Itinerary

There are two special arrangements, one for Exhibitors, staying five nights, and one for Visitors, staying two nights. Flights are by scheduled services from London (Heathrow or Gatwick) Airports on flights of your choice subject to availability.

Price per Person (Sharing twin bedded room with facilities)

	Sheraton Hotel
Tour A 5 nights	£255.00
Tour B 2 nights	£175.00
Single room supplement (per night)	£20.00

Accommodation Only Twin with Bath £59.00 per night
Single with Bath £50.00 per night

How to Book

Complete the booking form and post immediately to the tour operators, Commercial Trade Travel Ltd., Carlisle House, 8 Southampton Row, London WC1. Tel: 01-405 8666/5469. Telex: 21792/949. A deposit of £30 per person is required and cheques should be made payable to Commercial Trade Travel Ltd. A confirmatory invoice will be sent and the balance is payable on receipt of invoice. Tickets etc. will be despatched about 7-10 days before departure.

BOOKING FORM

Please complete in block capitals and return to Commercial Trade Travel Ltd, Carlisle House, 8 Southampton Row, London WC1. Tel. 01-405 8666/5469. Telex 21792 949

Name
Address
Additional names of Party
Telephone Number
The following accommodation is required: Twin with bath shower, Single with bath shower
I wish to book
I require suitable connecting flights if available from
I enclose herewith cheque to value of £
I understand that this booking will be acknowledged by a confirmatory invoice
Signature
Comprehensive insurance required YES NO Cost £5.95 per person

Award winners add to office furniture range

A RANGE of furniture for computer terminals and word processor equipment is available from Lucas Furniture Systems, winners of the Royal Society of Arts Presidential Award for Design Management.

It is designed around a few basic components, which can be adjusted to accommodate a variety of proprietary equipment. Constructed from timber panels and steel components, the furniture is available in either light oak or teak solids and veneers.

Within the range are a freestanding table, a compact sliding top work station and a turntable unit. Cableways are provided to conceal wiring.

The freestanding table, which incorporates a lower level keyboard platform, is 800mm wide with an overall depth of 800mm. It can be used as a separate unit or linked at right angles to a standard desk to form an L-shaped work station. If a shared facility is required, the table top can be linked to adjacent desks.

The turntable unit provides a shared facility for up to four operators. It can be fitted to any work surface or work top link and comprises a main platform for the VDU, with an angled platform incorporating an adjustable wrist bar for the keyboard.

The 1400mm wide sliding top work station combines computer terminal facilities with normal desk functions. An adjustable platform is fitted at the rear of the desk with an adjustable keyboard tray and adjacent storage compartment beneath a sliding work surface at the front.

Lucas (CW), 616 Wick Lane, London E3 2JJ. Tel: 01-980 3232.

Enhanced fake interface

AN enhanced Interfaker system, a piece of diagnostic and patching equipment for anyone using modems and terminals, is available from Modular Techoology.

The addition of a Glitch Trap for catching high speed transients, is claimed to have improved layout and circuitry, and has made Interfaker effective in faking the necessary interface so that plug-to-plug compatible equipment can immediately be interfaced by a user.

This is necessary because on delivery of plug-to-plug compatible equipment, the user often finds that the V24 sockets are wired differently. Interfaker can quickly be plugged between the units to monitor the status of up to 18 interface circuits at a time, diagnose any variation and fake the necessary interface to allow continuous transmission.

The system has an added feature for trapping positive and negative high speed transients capable of interfering with transmission. The Glitch Trap catches such transients and shows them up immediately on the LEDs.

Each V24 signal can be broken by means of small switches and then re-connected to other pins with small patch cables. In this way, faults can be diagnosed and new interface cables developed before any soldering of new plugs and sockets needs be done. An integral flexible cable and D-type plug connects to modems or computers and terminals plug into a D-type socket. Interfaker meets Post Office and PTT standards.

Modular Technology (CW), PO Box 117, Watford WD1 4PD. Tel: 01-421 0626.

Time-saving data collector

THE Datamyte 1000 is a general purpose, hand-held data collector with a solid state memory capable of storing 64,000 alphanumeric characters.

The unit is claimed to offer easier, faster, more reliable data collection and is also capable of interfacing with a range of electronic instruments such as bar code readers.

Benefits to the user are said to include substantial cost/time savings and less opportunity for human error. Computer down loading of the Datamyte reduces the amount of data to be entered, and the unit also provides prompts to the operator that lower the chances of missing data. Entries can be recalled, edited and compared with entries of previous studies. Following data collection, the data can be transmitted via an interface cable to the user's own computer or terminal for report generation.

Structural Monitoring (CW), 25 Blythswood Square, Glasgow G2 4BL. Tel: (041) 226 3601.

Graphics is now sophisticated tool in CAD and for presenting financial data. A three-page survey starts here.

The Cambridge phenomenon – what it means to graphics

by Petá Levi

OVER the last decade a phenomenon with a good deal of significance for British industry has occurred in Cambridge. Forty-one computer-based high technology firms have been established there during the period, and are now flourishing.

The impact on the graphics field has been particularly marked. There cannot be many British companies whose turnover increased by around 100% in 1980, yet that has been reported by four of the main Cambridge firms in graphics – Applied Research of Cambridge (ARC), Cambridge Interactive Systems (CIS), Laser Scan and Shape Data.

The Cambridge phenomenon occurred for a variety of reasons discussed below, but the strong impact on graphics was originally due to the fact that a number of very bright people who happened to be in the University at the right time (the 1960s), were interested in CAD/CAM. For instance, there were computer-aided design groups in both the computer laboratory and engineering department.

Shape Data was set up in 1974 by four members of the computer laboratory's CAD group, which one Shape Data director, Charles Lang, ran for 10 years; another member of this group, Peter Woodsford, is now Laser Scan's technical director and a third, Crispin Gray, is ARC's managing director.

The University CAD groups were already well established when in 1968 the Ministry of Technology set up the Cadcentre in Cambridge. This government research body, which now comes under the DoI was established to help develop CAD/CAM systems appropriate to the needs of British industry as well as develop for the commercial market ideas coming out of universities and research establishments.

Cambridge was chosen for a number of reasons; the expertise was already there and a spare ICL Atlas computer was available. Moreover, the University computer laboratory had a similar computer for which an innovative time sharing operating system had been developed.

The result was that more research was done in Cambridge on CAD/CAM than in any other part of the country, and since the factors which encouraged the Cambridge phenomenon in general have also helped the specialist graphics companies, these firms now lead the world in CAD/CAM software.

A number of important factors have contributed to the Cambridge phenomenon; they include positive moral encouragement from the University, a sympathetic planning authority and helpful banks. At the end of the 1960s the government exhorted universities to increase their contacts with science-based industry.

As a result Cambridge University set up a committee chaired by Sir Nevill Mott, whose report prompted Trinity College to invest £1¾ million in developing Britain's first science park, the Cambridge Science Park (CSP). This provided some of the emerging high technology companies with much needed space – Laser Scan was the first tenant in 1973.

The University has created a positive environment for the phenomenon by encouraging industry's University contacts and by giving industry access to the University's facilities such as libraries and laboratories. The feed-back for the University has included a 5-year research grant to the Cavendish Laboratory given by Laser Scan. This firm grew out of the Cavendish in 1969, and is now the largest Cambridge graphics firm, with 70 employees.

Many of the firms involved in the phenomenon were spawned by the University and Cadcentre. During the 1960s, in contrast to American attitudes, researchers would have been frowned on if, after making a discovery with the help of government money, they had gone off to exploit it – but not now.

This change has coincided with the cut-back in government research grants, which has left many researchers with the knowledge that academic life is no longer secure.

The City Planning Authority has been helpful in its interpretation of user rights. For the last 20 years the Authority was known for not encouraging expansion, but now this attitude has been modified. The recently approved Cambridge structure plan allows for considerable growth of the Milton area over the next 10-12 years, about 50 acres being allocated for industrial use.

Untypically, ARC (which specialises in large integrated interactive systems for building design, engineering design and production) started with one employee and 20 shareholders. It is now one of the established central Cambridge firms, with 27 employees.

This company has had a good relationship with NRDC, which provided a significant part of the investment to develop ARC's Building Design System (BDS). ARC sells its services and systems overseas and has distribution networks in South Africa and Australia, as well as a North American subsidiary; it has just signed a marketing agreement with McDonnell Douglas Automation.

Banking has made a further contribution to the phenomenon by publicly identifying it, thus helping it to gain cohesion. The person responsible was Matthew Bullock, a Cambridge assistant branch manager of Barclays before becoming personal assistant to Sir Anthony Tuke, chairman of Barclays.

Others may have seen what was happening but Bullock actually did something about it. In 1979 he called a meeting of 12 directors of the more established companies – the beginning of an informal group, the Cambridge Computer Co-operative. Each director wrote down the names of all the computer-based high technology firms he knew.

They were astonished by the list's length. Bullock arranged for speakers on subjects such as contract law and product protection and the Co-operative now provides a useful discussion forum for the companies to air their problems. Bullock also alerted a group of efficient solicitors and accountants to the importance of helping these firms.

Up to now the CAD/CAM firms have largely worked for the larger industrial companies, but suddenly medium-sized and small UK businesses are showing enormous interest in CAD/CAM systems.

This has happened for a number of reasons. The combination of cheaper and more reliable hardware and the revolution in the technologies of microcomputers, plotters, graphic displays and general time sharing services have brought hardware and software within the range of many people.

And the fight to remain competitive at a time when labour is becoming increasingly expensive and (ironically at a time of unemployment) the difficulty in finding skilled designer/draughtsmen is forcing UK business to see if the new technology will provide tools which can make them more competitive.

CIS was set up to serve their needs in the mechanical engineering field. Spawned by the Cadcentre four years ago, it produces Medusa and Cablos, two CAD/CAM turnkey systems which can be adapted to a particular company's needs, and it already has 25 employees.

Nigel Payne, the managing director of the new CIS offshoot, CISP (dealing in the packaging and marketing of its products) says: "With world-wide economic recession there is a surge of interest from businesses in the advanced countries. They are looking for the appropriate computer graphic system to shorten the time between design and manufacture."

CIS has just started a US company and already sells to heavy electrical and mining industries in Europe and the UK.

CIS believes it is combining the best attributes of British software with well-engineered hardware – usually Prime computer with Tektronix storage/graphic terminals, though it will increasingly use raster-scan devices in the future. CIS assesses a company's need, designs and fits a system, trains personnel and provides a strong back-up service.

For instance, CIS' Medusa (basic price £63,000) can be interfaced with Shape Data's sophisticated solid geometric modeller, Romulus, which contains a complete description of each component's shape.

Next, if structural analysis is required, Medusa can be interfaced with software from FEGS. FEGS is another Cambridge graphics company, which specialises in finite element mesh generation with its Femgen package, and in inspecting finite element analyses with another package called Femview.

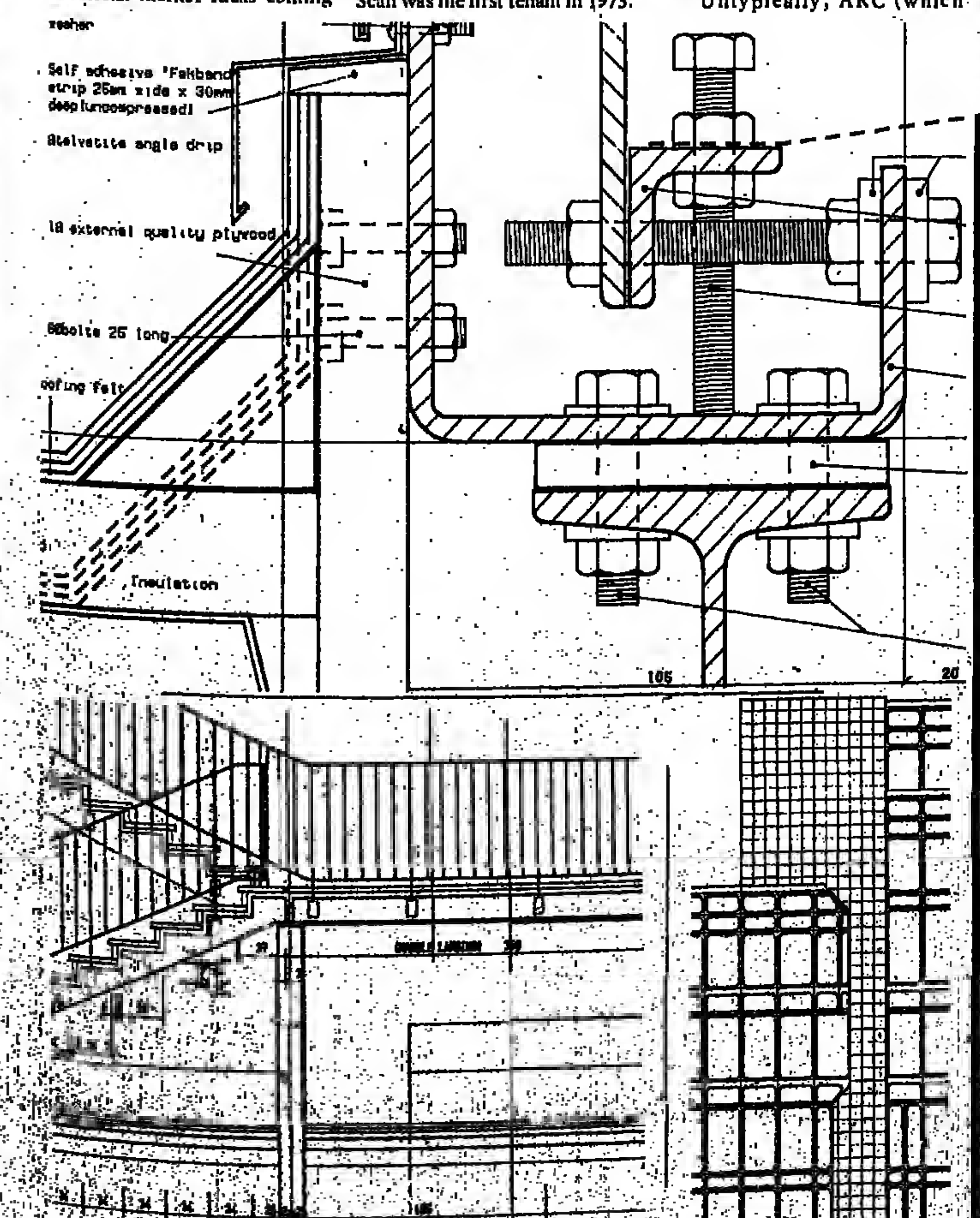
Finally, CIS will provide Medusa with the means to generate a numerical control tape to control production and equipment.

Shape Data's Romulus is incorporated into other CAD/CAM turnkey systems, Ferranti-Cetec's CAM-X and Contraves' Zurich Concad. Charles Lang of Shape Data notes: "It is also bought by companies who incorporate it into their own in-house systems."

Another area of Shape Data's work is custom-made software. Lang gave me an example of a continential company which makes centrifugal pumps, because the history of their relationship is typical.

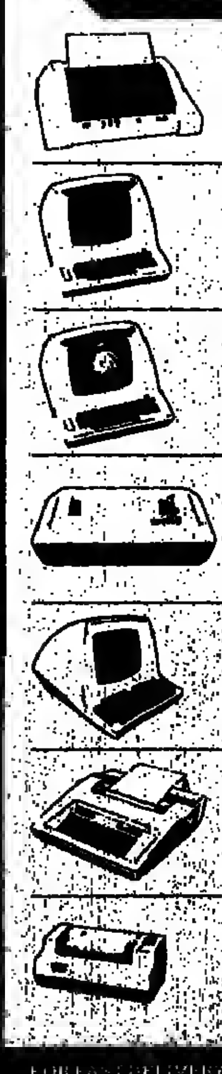
The company started by giving Shape Data a trivial job to run on

● Turn to page 22



Three scale drawings of a building produced by the GDS interactive computer-based draughting system from Applied Research of Cambridge. At top is a close-up of the building's steel fixings, originally drawn full size; above, left is a detail of a concrete staircase, first drawn on scale 1:25; above, right is an elevation (original scale 1:50).

RIVA TERMINALS



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The level of interest is 'enormous'

● From page 21

Shape Data's computer. Then a commission followed for them to write some programs which were loaded onto a service bureau computer. As use of the programs built up, the company bought its own computer, as well as Shape Data's software tools so that they could develop programs themselves.

Now, after four years, the company has made a complete switch to the new technology; it no longer makes any manual drawings for the design of pump volutes, and producing prototypes now takes a few weeks instead of several months.

Shape Data now has 13 employees and its software is distributed in the US and Canada by Evans and Sutherland Computer Corp of Salt Lake City.

A major thrust at the Cadcentre has been in chemical engineering and the process industries. The Cadcentre employs 150 people, 120 of whom are technical staff, equally divided into computer scientists and professional engineers.

One of its earliest projects was the Gino software, a Fortran graphics package dealing in simple line graphics in 2D and 3D. Later development in graphic applications range from laying out pipes in a petrochemical works to designing shows or simulating the way a machine tool cuts metal.

A new area being developed is image processing, which is built on colour graphics.

The Cadcentre's prime objective is to evolve better CAD/CAM systems through undertaking joint projects with industry. Some companies pay for the service in full and other apply for a 50% government grant. Last year the Cadcentre cost £3.2 million to run and recovered £1.5 million through services and royalties on software licences.

For the construction industry, ARC has developed two approaches. ARC grew out of the University's School of Architecture in 1969 and its experience has enabled it to produce a combination of 3D modelling and a wide draughting capability.

This company's BDS package is a modelling approach which makes a 3D computer model of a large complicated building (it was originally used for a hospital), from which assessments and analyses can be made.

General Draughting System, GDS, is intended to carry out all functions required of draughting in the construction industry, from producing maps to site layouts and engineering details. GDS has been used to design an airport terminal and is being used by the Property Services Agency, for its Post Office telecommunications headquarters.

Two other industries to benefit from the Cambridge graphics phenomenon have been cartography and security printing. Laser Scan's high resolution display and plotting capability serves both, as demonstrated by the HRD1, which has a high resolution of approximately 8,000 lines in each axis and a large screen display.

The high resolution display is used for security printing because of its ability to produce direct hard copy output. People producing sensitive documents can check what they see on the display screen before producing a hard copy from which they can print.

Laser Scan's contribution to cartography has been not only in display and plotting, but also in producing software to run on such machines, and more recently on other people's machines. Laser Scan has sold about 16 HRD1s (at £60,000 each) to clients as varied as the Ministry of Defence and the mining industry.

At the moment Laser Scan's Fastrak Digitiser is only used for cartography, but the company hopes it will be used for engineering drawing digitising.

Laser Scan's microfilm plotter is the company's first component for a system. The resolution falls somewhere between the very fast, but expensive, CRT devices and the conventional and relatively cheap pen plotters.

After many years of relatively quiet development in CAD/CAM techniques it is exciting to find growing awareness that CAD/CAM systems now have the potential to save many of Britain's hard-pressed industries. These Cambridge graphic firms not only have the technology, but they are realising the importance of packaging and marketing. From the consumer's point of view, the problem is what to choose, how to sort out the different systems and how to interpret what different suppliers mean by the same jargon word.

● To provide the consumer with information and guidance, the Cambridge graphic firms are organising their first conference. Called Investment in CAD/CAM Technology and open to anyone, it is being held at Churchill College, Cambridge on Tuesday March 24. For details write to CAD/CAM Publications, 170a Park Road, Peterbrough, PE1 2UF.

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User markets expand as costs are cut

by Howard Rippiner

SINCE the early days of computers, there has been a requirement for the pictorial representation of data, but initially the generation of graphics required a great deal of computing power and memory capacity, which made it too expensive for general-purpose use. However, in 1968 the development of the bistable direct-view storage tube opened up the market for lower-cost graphics terminals, and when the first commercial terminal using this approach was introduced in 1971, it cost less than half the price of its nearest equivalent.

The first storage-tube devices to come on to the marketplace offered a display capability of 266 line pairs, which meant that the user could address 1024 points horizontally and 780 points vertically. As the need grew for increased graphics complexity, manufacturers developed larger-screen terminals as well as techniques for "zooming" in on a particular section of the graphics picture. At the same time, terminals offered more comprehensive graphics facilities, including different hardware-generated character sizes, line types, etc.

Built-in microprocessors have added intelligence and storage capabilities to the basic graphics terminal. Typical of the features offered is the ability to call up local "macros" consisting of standard, regularly used shapes, and local picture editing has become standard on many systems. Digitising tablets and flexible-disc stores add further to the terminal's manipulative and storage abilities, as well as minimising the need for data communication with a host computer.

One of the most important developments in recent years has been the combination of refreshed display information with data retained on the storage tube, which means that selected foreground information can be manipulated against a background of high-resolution stored data. The refreshed graphics facilities allow the user to display, select and manipulate moveable pictures, while the storage facilities allow the display of very large amounts of graphics and textual information without a flicker.

Another important sector of display technology uses raster-scan techniques to build up the graphics picture. Raster-scan displays have come into their own recently because of their ability to produce colour graphics, which has compensated for their relatively limited resolution. Colour is becoming increasingly important in many graphics applications, such as computer-aided design, process control, mapping and architecture, where several different levels of information need to be overlaid or viewed simultaneously without confusion.

Raster-scan displays have also brought about significant improvements in the merging of graphics and alphanumeric symbols in the same picture. The availability of low-cost video chips and lower-cost memories has stimulated the development of techniques such as the virtual bit map, which allows many pages of data to be stored with full facilities for scrolling the data.

In virtual bit mapping, the operator uses a software program to establish a graphics region on the display screen. The rectangular graphics region can be displayed anywhere in the display area, with the remainder of the area considered as alphanumerics. The graphics region is then further divided into graphics cells, and the program is arranged so that graphic memory is allocated only to those cells containing graphics information. The remaining graphic cells appear in the display as spaces, with the result that the overall memory requirements are greatly diminished.

The addition of colour to the graphics display requires a change from a single memory plane to three memory planes, with additional planes offering a choice of eight colours. A combination of hardware and software techniques allows any selection of eight distinct colours to be made from an overall palette of 64, and the mixing of dots of different colours allows additional colours to be generated. In fact, it is possible to generate a picture containing 125 distinct colours from patterned mixtures of the eight basic shades.

One area of graphics which is suited to some specialised applications is that of calligraphic displays, in which the vectors are continuously refreshed on a conventional screen without using raster scanning. To avoid flicker, the information needs to be written between 30 and 50 times each second, which means that a processor at least as big as a minicomputer is required merely to drive the display. Hence calligraphic systems are very expensive. Moreover, even with this amount of processing power there is a limit to the amount of information that can be displayed without flicker.

> "The applications of computer graphics continue to grow daily. Almost anyone who has to interact with a computer can do so more effectively with the aid of graphics."

The big advantage of calligraphic displays is their ability to handle dynamic information, so their use tends to be restricted to applications where this is an essential feature and where cost is not a primary consideration. Flight simulation is a typical example.

However, intelligent graphics terminals and desk-top graphics computers are now available with a significant amount of refresh capability and have made inroads into what might have been a potential market for calligraphic displays.

The applications of computer graphics continue to grow daily. Almost anyone who has to interact with a computer can do so more effectively with the aid of graphics, and as the costs of complete systems come down, so the user markets expand. The initial impact of graphics on engineering and scientific applications has now been extended to a much wider field. Computer-aided design and manufacture are key areas, and for the future two big growth areas are laboratory data analysis and business applications.

Another important future growth area is colour graphics. We are already seeing the introduction of low-cost colour hard-copy units which will virtually remove the last remaining barrier to the general adoption of colour graphics techniques in a wide range of industries, so that a whole new field of graphics is now ripe for development.

Howard Rippiner is product manager for terminals and displays with Tektronix (UK) Ltd. He joined Tektronix in 1969 and has been involved with the company's Information Display Division since 1975.

A picture is worth a thousand words in company computing

by John Dimmock

MOST people are aware of the many changes that have been brought about by the rapid increase in the use of computers throughout industry and business. Not quite so obvious, but perhaps more significant, are the changes taking place in how companies are utilising their computer facilities.

One area where this becomes quickly apparent is in computer graphics. This section of the computer market is currently enjoying the fastest growth rate within the industry, and the reasons are simple.

The first companies to recognise the advantages of computer graphics were perhaps understandably those where the production of graphs or drawings played a major part in the company's activities, and where, traditionally, information needed for design, analysis and costing had always been represented pictorially.

In those early days manufacturers of pens and plotters sold their machines mainly into the architectural, surveying and structural engineering industries.

These companies had a high throughput of drafting, and by using a plotter were able to produce extremely accurate drawings at high speed, thus drastically reducing design labour costs and the time taken on a project between the initial design or drawing stage through to detailed finished drawings for production purposes.

As these benefits became accepted, a demand came from other fields, notably in electrical and mechanical engineering, local government, hospitals and a wide range of research applications.

The decision to purchase a computer system in these organisations was usually made for reasons of improved efficiency and reduction in overhead costs leading to an increased return on investment.

Once installed the system, if efficient, did just that, but usually created new administrative problems in its wake for management to iron out. For example, vast quantities of digital data presented in a form which was unfamiliar to the staff now had to be checked, cross-checked and somehow presented in a way that could easily be assimilated. Of course, all this data was accurate; but humans had to analyse it and act on the results.

> "This section of the computer market is currently enjoying the fastest growth rate within the industry."

It became clear that only half the problem had been solved. What was needed was a method of representing all that data, and one that could be quickly and easily understood.

Visual display terminals helped, but were usually not capable of any more than simple bar charts and form layouts which still were presented in a digital form.

The old saying, "A picture is worth a thousand words," became obvious and, so graphics display terminals and the use of plotters for hard copy spread to all sections of the computer market.

A drafting machine or plotter enables highly accurate drawings or graphs to be produced rapidly which convey information pictorially, thus giving a permanent visual representation of what is often just a jumble of figures and columns of data. This allows design problems to be located and amended immediately.

From initial sketches to detailed finished drawings, from research studies to prototypes, from pre-production samples to production tooling, from random information to detailed project planning, the appropriate system can be utilised. Each stage between the original design idea and the finished drawings can now be made more productive.

A designer can develop ideas and feed them into a system at the beginning of the design phase and not just before documentation is needed. These ideas can be manipulated physically to produce designs and drawing files from which working drawings and data can be reproduced at high speed on the plotter.

The first choice is usually between a pen or electrostatic machine. The latter offers very high speed output and can double up as a printer and hard copy device. Traditionally electrostatics were used as a "quick look" device, with a pen plotter for final plots, but as drawing quality is improving all the time they are becoming more than an acceptable alternative, and for applications where shading and imaging are necessary, electrostatics are ideal.

If the drawing requirements are better served by use of a pen plotter, the choice then is which type of machine to use. A flatbed uses single sheets of paper so plots can be removed and put back later to add more details. Overplotting and to pre-printed sheets can be carried out; valuable for surveying, cartography, weather mapping etc.

The quiet operation of flatbeds can make them suitable for the normal office. Size for size they usually cost more than drum machines, but offer flexibility; various types of paper material can be used.

Drum plotters are usually chosen where faster throughput is desired and where more than one drawing at a time is required. These machines use continuous rolls of paper available in three widths. They require less supervision as drawing sheets do not need frequent replacement. A wide choice of papers is available and the plotters take up less space than a conventional flatbed.

Many industries are currently using software systems specially written for their particular application.

The fourth type of plotter is computer-output microfilm (COM), producing images on sensitised film or fiche.

In the field of architecture, systems are available which facilitate accurate drawings at any required drawing scale to be taken from the full-size building model stored in the computer's memory. Information can be coarse at early stages and refined as the project progresses. Once the building plan has been laid out elevations and sections can automatically be generated on to a plotter.

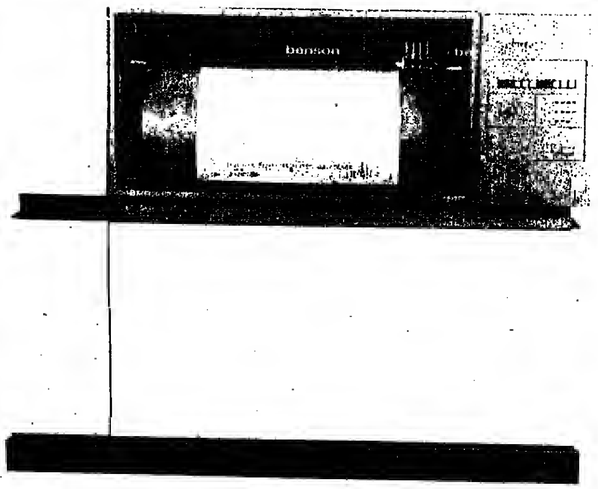
Libraries of components can be stored for re-use on the project or transfer to other projects. The rapid plotting on to a drafting machine means that drawings can be produced at a later stage in the project, which means fewer revisions.

One company has produced a system, utilising a drafting machine, which satisfies all the information processing and reporting needs of project management. This system has proved extremely successful in applications ranging from contract bidding through to time-sheet analysis and in industries from aerospace to offshore platform construction.

This type of system processes information on materials, costs, jobcards, drawings, activity etc by means of a technology called relational database. Graphs are then produced on to a plotter which can show cost performance against time scale, allowing for data entry and updating at any time.

Also in use are CAD systems for the economic design of printed circuit boards and integrated circuits. Output on to pen or electrostatic plotter can be photo-reduced and used as masters in the manufacturing process.

The author is sales support manager of Benson Electronics Ltd.



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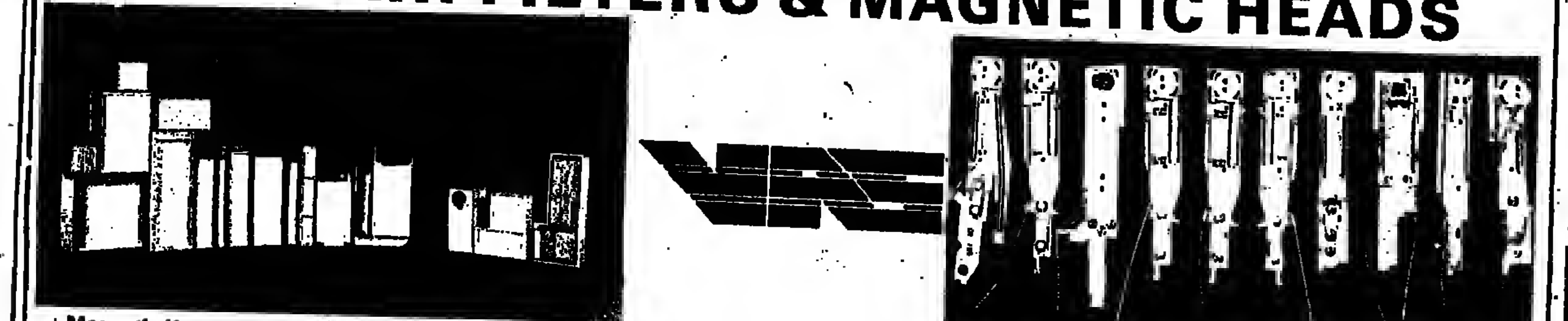

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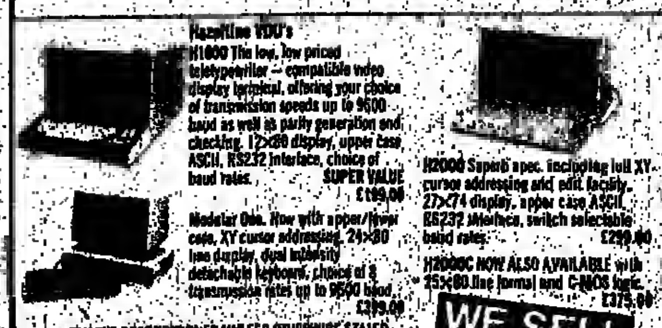

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[4720]

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* **FIELD ENGINEERS** to be responsible for installing and servicing our products throughout the whole of the UK with some occasional European travel. At least two years' experience in the maintenance of DEC or DG minicomputers with experience on Disk, Tape and Memory Sub-systems a distinct advantage.
* **TEST TECHNICIANS** to be responsible for final testing of computer disk systems at our newly created testing facilities. Experience on exchangeable or fixed media high capacity disk drives preferable.
* **REPAIR TECHNICIANS** who will have gained a good grounding in digital and analogue techniques. Knowledge of high capacity disk drives preferable.

The company, an equal opportunity employer, offers an excellent remuneration package with extensive fringe benefits including profit related bonus plan, stock purchase plan, contributory pension scheme with free life, accident, BUPA and sick pay insurance, four weeks annual holiday entitlement with three months paid sabbatical leave in the seventh year and for all Field Engineers, a company car will be provided.

For an appointment please ring Norma Johnson on Woking (048 62) 5077

System Industries

System Industries (Europe) System House, Guildford Road, Woking, Surrey GU22 7QO

(4329)

Software Professionals

Real-time command and control systems

Surrey **up to £10,000**

- A high level of personal responsibility in a congenial, professional environment.
- Stimulating work in multi-disciplinary teams involved in a variety of projects.
- Considerable room for career progress: ability, initiative and achievement recognised and rewarded.

The range of work at Plessey Radar is as varied and exciting as in any systems business in the world. Activities include real-time data processing systems for air traffic control; meteorological and environmental monitoring and control systems etc.

We want to find a limited number of Software Specialists with some background in implementing real-time command and control systems. Experience of the PDP11 and VAX11 range of computers is desirable but not essential.

Attractive salaries will be offered in line with experience and substantial relocation expenses will be paid where relevant.

So, if you want a bigger job with a professional team, ring or write to Peter Steiner, Recruitment Manager, Plessey Radar, Addlestone, Weybridge, Surrey. Tel: Weybridge (0932) 47282.

PLESSEY
electronic systems

Systems Programmer

Apply your ICL 2900 knowledge to a new challenge

The work of the Computer Services Department at BNOC in Glasgow is demanding and varied.

Now, BNOC and ICL have joined forces in a new and challenging venture: to develop oil industry software using an ICL Distributed Array Processor (DAP), the first to be installed in a commercial setting.

Initially concerned with reservoir simulation software, the project is seen as a unique opportunity to develop parallel processing techniques.

As an integral part of the 2900/DAP team an ICL 2900 VME/B systems specialist is required who has up to three years experience on VME/B and is familiar with its current development.

The salary/benefits package, including generous assistance with any relocation, is structured to attract people of exceptional abilities.

For details and application form, which should reach us by 2 April, please write or telephone quoting ref KM/CW to: Ken Mearchent, Divisional Personnel Officer, The British National Oil Corporation, 150 St. Vincent Street, Glogow G2 5LJ. Tel: 041-226 5555.

BNOC

Share in a better Britain

IMPERIAL COLLEGE

Blackett Laboratory

Research into Electronic Properties of Solids

The Department of Physics of Imperial College has a vacancy in the Solid State Theory Group arising through expansion of the group's interests into the electronic properties of solids and their surfaces, research which involves considerable scientific computing. The successful candidate would be expected to take part in development of computer codes in collaboration with members of the group, and would be responsible for documentation and general availability of the codes required by the group and its research students. We are looking for applicants who could make a creative contribution to the research of the group, and who have a PhD in this general area of research, though other applicants, particularly those with a background in computing, would be considered.

Salary will be at a point on the academic related IA scale c. £7000-£11,500.

For further information contact the Professor Elect of Solid State Theory: John Pendry, SRC Labs., Daresbury, Warrington WA4 4AD, Telephone 0925-65000, Ext. 224. Applications with c.v., list of publications and names of two referees to this address by 31st March, 1981.

(4336)

User Interface Programming

The Computing Division provides a service for researchers sponsored by the SRC in universities, polytechnics and its own laboratories. The major computing power is provided by two IBM 360/195's and an IBM 3032 linked together and accessed from works stations and interactive systems (mainly PRIME and GEC) connected to the SRC network.

Vacancies exist in the User Interface Group for PROGRAMMERS and a PROGRAM LIBRARIAN.

The programming team is responsible for liaising with users of the central computing service, offering advice and guidance with problems, documentation implementing utilities and some involvement with developments of the service. Experience with IBM systems is required.

The Program Librarian will be responsible for general purpose program libraries which include standard supplied software used on a range of computers and locally developed software for particular machines. Some knowledge of numerical techniques and the portability of software is required. The person appointed will spend some of the time in general advisory duties.

A good knowledge of FORTRAN and the ability to produce meaningful documentation are required for these posts. Successful applicants should already have some experience as users of a Computing Service. A knowledge of any of VM/CMS, OS/MVT, MVS, Graphics, Assembler, PL/1, BCPL would be an advantage. Applicants should have a degree in computing or some related subject.

SALARY: Higher Scientific Officer – £6075 to £7999 or Scientific Officer – £4809 to £6480.

Appointment to a salary scale point above the minimum may be considered for candidates with good qualifications and particularly relevant experience/specialist training.

The Laboratories are a friendly community with their own restaurant and sports facilities nearby. We offer excellent working conditions, and benefits include a local transport service, generous holidays, sick leave allowance and a non-contributory superannuation scheme.

For an application form please write to: Mary Elizabeth Fry, Personnel Group, Rutherford & Appleton Laboratories, Chilton, Didcot, Oxon. OX11 0QX, quoting reference: VN930. CLOSING DATE: 3rd April, 1981.

Rutherford and Appleton Laboratories

SYSTEMS ANALYST – Manager-designate

SALARY NEGOTIABLE UP TO £11,000

THE COMPANY

National Public Company, turnover around £20M, priding itself on its service in catering supplies and other disposables.

JOB BASED IN MORDEN – The company initially wants to computerfee finance and accounting procedures. Inventory, sales information and invoicing will follow as soon as possible. The company has previously had no internal D.P. department so this is a "greenfields" situation.

JOB OBJECTIVES

1. To supervise the installation of the PDP 1144 machine and ancillary equipment and liaise with hardware and software suppliers.
2. To analyse current financial control systems and in co-operation with the department managers involved to devise computer systems to handle this work effectively.
3. To develop systems to enable Branches to use the computer for inventory control, sales information, invoice production, etc.
4. Thereafter TO MANAGE THE COMPUTER DEPARTMENT, monitor its performance, advise on its development and further possible uses.

THE PERSON

1. Age 26-35. Now resident within easy commuting distance of MORDEN.
2. Good general education, desirably to a high level.
3. Must have had formal training in D.P. operations, including systems analysis and be a people person.
4. Must have not less than three years' experience of systems analysis covering the area of work described in the job objectives.

INTERESTED?

Then call Douglas Stephens at Great Dunmow (0371) 3626, 10 a.m.-12 noon, 2-4 p.m., weekdays, or Great Dunmow 2345, any evening 7-9 p.m., for a chat about this vacancy. Otherwise write to him at:

DSA APPOINTMENTS, 12A Stortford Road, Dunmow, Essex CM6 1DA.

All replies will be acknowledged and no information of any kind will be passed on to any individual or Company without prior permission given after a preliminary interview.

(4362)

UNIVERSITY OF SOUTHAMPTON

COMPUTING SERVICE

The University Computing Service is seeking additional staff to augment the services it offers to the University community in the area of user education. The Computing Service provides extensive batch and interactive processing facilities based currently on three local systems – a dual ICL 2970, a Honeywell 6080 and a PDP 11/45 and uses facilities at London and Manchester Universities via remote links. In addition to the support of mainframe services, a microcomputer system development service is being established and a campus network is under development.

Applicants should possess a degree or equivalent, have substantial experience of the use of computer systems in an academic environment and have an appreciation of the problems and priorities in the education of potential and experienced computer users.

The appointment will be in the salary range of 1B or 1A of Other Related Staff: £4790-£9595 p.a. (under review). The starting salary will depend upon qualifications and experience.

Applications (2 copies) giving curriculum vitae, qualifications and experience and the names and addresses of two referees should be sent to Mr. P. Vaughan-Smith, Staffing Department, The University, Southampton [illegible], from whom further particulars may be obtained. The closing date for applications is 3 April, 1981. Please quote ref: [illegible]

(4343)

Project Leaders – Analyst/Programmers

Your future could be here.

Our clients, based in the West of Scotland, are part a multi-national concern with expanding interests. A major share of the UK market and increasing export figures have led to high profitability, stability and a work force totally unaffected by the current recession.

The IBM installation, offering batch and on-line processing is therefore bustling and vital to the company. This is reflected in the quality of staff, who achieve individual recognition and excellent career progress.

PROJECT LEADER £9000 + car allowance

Responsibilities will include involvement in high level systems and database design as well as travel to European installations. The successful candidate will be able to work quickly and efficiently and have wide ranging experience including a programming background.

SENIOR ANALYST/PROGRAMMER £8,000

The successful candidate will already have experience of systems design in a commercial, financial or production environment.

Situated close to one of Scotland's many beautiful areas our clients offer normal large company benefits, including a generous relocation package where applicable. If you want to be part of this thriving and successful company and be rewarded for your own ability and efforts phone David Hicks or write to him at:

Harrison Cowley Executive Selection

2 Hill Street, Edinburgh EH2 3JP. Tel: 031-225 6764 (24 hr. answering service)

MYRIAD

SENIOR SYSTEMS ENGINEERS

OFFICE SYSTEMS FOR THE EIGHTIES

NORTH WILTS **£10,000-£13,000**

We are seeking enthusiastic and well-motivated senior engineers to join a specialist group which has responsibility for the evaluation, definition and development co-ordination of advanced systems for Telecommunications and Information Processing.

The Group has a major development plan which, in conjunction with the existing products, will enable the company to make a major impact upon the Office Systems market of the next decade.

The successful candidates will offer a proven background in systems development including substantial experience of one, or more, of the following areas:

★ Hardware development of digital electronics in communications and computer interfacing
★ Digital systems simulation for modelling future business systems
★ Software for computer communications and filing systems, editors, etc.
★ CCITT standards and protocols for digital information exchange

Engineers will be educated to degree level, be prepared and able to take a total system approach, and be sufficiently experienced in one or more of the above fields to take a given project to completion.

These positions offer excellent scope for technical originality in a demanding and exciting field. Conditions of employment are excellent and include comprehensive relocation expenses where appropriate. To discuss the scope of these opportunities in detail and arrange an interview either telephone Myriad on the number below or write quoting reference

RN3/1903/CW.

TELECOMMUNICATIONS SOFTWARE DESIGNERS

WILTSHIRE £ NEGOTIABLE

One of the market leaders in the field of telephony systems, our client is seeking additional Senior Software Designers/Programmers who will play a major role in the development of the new generation of fully digital telephone switching systems.

The successful candidates will offer experience of:

★ Telephony software development
★ Mini and micro systems
★ High-level languages (CHILL/PASCAL/CORAL)

The company offers excellent conditions of employment including high base salaries and relocation expenses where appropriate. To discuss the organisation and these positions in detail telephone Myriad on the number below. Alternatively write, quoting reference

RN4/1903/CW.

BUILD A DEC NETWORK

UXBRIDGE **£9-£10½K**

A recently-installed PDP 11/70 forms the heart of a distributed processing network that will support twelve remote sites, thereby providing advanced interactive systems for local users.

The Software Group is now seeking to expand its team of specialists by recruiting a TECHNICAL PROGRAMMER with RSTS/E operating system experience. BASIC + 2 knowledge is highly desirable but applicants with a sound hardware and telecommunications background will be equally considered, as the Group is currently tuning and further developing the network.

★ RSTS/E
★ REMOTE TERMINALS
★ TELECOMS. SYSTEMS
★ REAL-TIME SOFTWARE
★ RMS/FMS TRAINING
★ BASIC + 2

The Company is proud of its international reputation as an employer offering a secure and positive future along with a first-class benefits package, including relocation expenses where appropriate.

REF: S1/1903

MYRIAD APPOINTMENTS LIMITED
30 Fleet Street London EC4Y 1AA Telephone 01 353 0981 24 hours

Opportunities in Systems Programming
ICL 2900/Univac 1100

LONDON — up to £11,497

We are looking for Senior Systems Programmers/Systems Programmers to join the Technical Support Group of our Computer Services Department. This Group is responsible for all aspects of systems support on the Department's mainframe computer systems [currently ICL 2972 and Univac 1100/21] which provide a bureau service to British Gas HQ Departments.

This work involves the implementation, maintenance and development of all systems software [future TP work is envisaged], the design and production of special software and utilities as required, and the provision of a support function to the Operations Group and all users of the bureau service.

The Department is also active in office automation, microcomputing, specialist computing, compumetrics and database projects – there could be scope for your future involvement in these development activities.

Ideally, you should have some experience in systems support, or a sound technical and working knowledge of large computer systems. A good degree would be an advantage. Experienced Applications Programmers who would like to make a career change into systems work will also be considered.

The Department is situated on the borders of Fulham and Chelsea – work is organised on a project basis, and there is every encouragement for personal initiative.

For further information on the openings available please ring John Yonge on 01-736 3344 Ext. 290.

Starting salary will depend on qualifications and experience but will be within the range £8,668 to £11,497. The benefits are those normally associated with a large progressive organisation. Ref. EP/763904/CW.

BRITISH GAS

OPERATIONS MANAGER

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With the imminent installation of a NCR Criterion 8565M computer, the Society has an immediate vacancy for an Operations Manager. The person appointed will have experience of working with NCR computers as well as in depth knowledge of NCR's VRX operating systems. Added advantages will be a knowledge of on-line networks and experience of working within a financial organisation.

An attractive salary, commensurate with qualifications and experience is offered, together with concessionary mortgage facilities (after short qualifying period) and entry into a non-contributory Private Health Insurance Scheme.

Please apply in writing giving full details of qualifications and career to date to: *Mr A H Davies, Personnel Controller, Chelsea Building Society, Thirlestaine Hall, Cheltenham, Glos GL53 7AL.*

CHELSEA BUILDING SOCIETY

HOLLAND

Lucrative Short Term Contracts for

COMPUTER PROGRAMMERS

Familiar with SBC Inlet Boards (Multi-Bus), High level Programming Languages PIM 80.

Please telephone:

Mr A. Quick on Reading 862104

or send full résumé to:

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50 Mount Pleasant, Reading, Berkshire (4833)

ims INTERACTIVE MARKET SYSTEMS UNITED STATES

$16-20,000

Rapidly growing 75 person New York based company offering interactive computer services to the Advertising and Market Research Communities in the US, Canada and Great Britain has openings for

PROGRAMMERS

DEC 10/20 experience and/or market research/statistics experience desirable. Knowledge of FORTRAN and at least one other language a must. Initial interviews will take place in London with the Chairman this month. Please write with details of qualifications and experience to:

CHAIRMAN
Interactive Market Systems (UK) Ltd.
Grosvenor Gardens House
Grosvenor Gardens
London SW1W 0BS

CAREERS IN THE U.S.A. NOT INTERESTED IN NEW YORK?

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We can now offer interesting jobs at all levels to those with over 2 years' sound experience in COBOL with MVS/OS/DOS/VS/CICS.

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Interested? Send your CV or call Lloyd Williams at Computer Two Thousand.

STOP PRESS: We are still interviewing for FLORIDA and CALIFORNIA so, if you would like to stop by for an informal chat, call in at the New Berners Hotel, Berners Street, W.1 and ask for Bob Collett.

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IMS DV/DC/ADF ANAL PROGRAMMERS

HEXAGON computer services
Hexagon House 145 Wardour Street London W1V 3TB

NORTH YORKSHIRE COUNTY COUNCIL
COMPUTER SERVICES MANAGER

£11,288-£12,939 (from 1st April, 1981)

The authority uses large ICL 2878 and 2870 systems operating under VME/B, which provide a comprehensive computer service to all departments of the County Council, several district councils and bureau users. The section has a current staff of 74 and is involved in developing advanced computer systems. The successful applicant will be responsible to the Head of Computer Services for whom he/she will deputise as necessary and carry a major share of the management section. Applicants should have in-depth computer experience and proven management ability at senior level in a computer services organisation.

Apply, giving personal details, summary of previous experience and names of two referees, to County Treasurer, County Hall, Northallerton DL7 8AL. (Tel. Northallerton (0609) 3123, Extension 515).

Closing date 4th April, 1981. (4879)

LIVERPOOL POLYTECHNIC
COMPUTER SERVICES DEPARTMENT

PROGRAMMER

£5,952-£6,750 per annum

A new computer system is being installed during the summer to provide interactive facilities for all Polytechnic departments. The new computer system, supporting 64 simultaneous users, will be operating in parallel with the existing 1903A batch system.

The Polytechnic's Computer Services Department was created little over 18 months ago and staffing levels within the department on the programming side are minimal. The successful application will be expected to play a major role in the installation of the system and the establishment of an effective computing service for the Polytechnic.

THIS VACANCY OFFERS A UNIQUE OPPORTUNITY TO BE INVOLVED AT THE START OF A MAJOR DEVELOPMENT PROGRAMME.

PLEASE QUOTE REFERENCE LP/[illegible]

Applications are invited from candidates who have, or expect to obtain, a degree in Computer Science. For further particulars and application form, contact the Personnel Office, Liverpool Polytechnic, Rodney House, 70 Mount Pleasant, Liverpool L3 5UX. Tel: 051-709 [illegible] Ext. [illegible]. Informal details may be obtained from members of the Computer Services Department [illegible] 051-207 [illegible] Ext. 129.

When you finish hunting

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You must have wondered about the Middle East. You will certainly have seen plenty of ads and heard a few stories about life out there. Why not get the facts? They are well worth hearing.

At the Gloucester Hotel on Monday, 23 March we'll be offering coffee, answering your questions in detail, and showing a few slides.

We'll introduce you to people with recent first-hand experience of life in Saudi Arabia.

If you hold one of the following positions, we look forward to talking to you. It would be the best move you'll ever make.

Office Systems Analysts · **Systems Analysts** · **EDP Trainers** · **Standards Writers** · **Transport Data Systems Advisers** · **Systems Designers** · **Business Systems Analysts** · **Programmers** · **EDP Planners** · **Systems Analysts** with Hewlett-Packard experience · **Contracts Analysts**

Applications experience could be wide ranging, but machine experience should have been on large IBM systems. A degree, HND or equivalent qualification is essential.

Benefits package includes

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OCC Computer Personnel

We look forward to meeting you at **GLOUCESTER HOTEL**, 4 Harrington Gardens, London SW7. Between 6.00pm and 9.30pm on Monday, 23 March (Nearest underground Gloucester Road)

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Data Base Administrator/Analysts & Systems Programmers

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Systems & Programming

Programmers, Analyst Programmers

LONDON — to £8,500

Our client, a subsidiary of a major oil company, is currently seeking experienced mini-based COBOL programmers, educated to degree standard. An excellent career path leading to own Project control plus a comprehensive benefits package will be on offer.

IBM Systems Programmer

ESSEX — to £10,000

This organisation is planning to install an IBM 4300 to meet with an increasing work load, incorporating a large T.P. network and distributed processing. A minimum of 3 years' Systems Programming experience coupled with a knowledge of DOS/VS, Assembler and one on-line system is required.

IBM Cobol Programmers

MIDDLESEX — to £7,500

This industrial organisation is soon to install an IBM 4331 to develop a variety of on-line applications. Applicants should possess a minimum of 12 months COBOL experience and a sound knowledge of CICS.

Analysts, Tech. Support Programmer

ESSEX — to £11,500

This electronics company, engaged in Production Control applications, seeks additional personnel for its Hewlett Packard installation. Analysts must have a Cobol background and 2 years' systems experience, whilst the Technical Support Programmer must have 5 years' Cobol and preferably a knowledge of H.P. hardware.

VIKING

IBM Analysts & Programmers

Salary range £7,500 to £12,000

LONDON HOME COUNTIES & DUBLIN

We have a myriad of vacancies for experienced Analysts and Programmers for numerous clients based in the Home Counties and Dublin.

A sound knowledge of on-line systems in either a DOS or OS operating environment would be an advantage.

All positions offer an attractive remuneration package with excellent opportunities for career advancement.

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This U.K. giant of the entertainment business is currently seeking a Manager to oversee the research and development of a large scale point-of-sale implementation.

The ideal candidate will have a consultancy or Project Management background with a knowledge of micro-based systems in a commercial environment.

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A successful Bureau and Systems House organisation is currently undergoing rapid expansion.

To meet the demands of this increasing market, additional sales people are required to sell their broadly based business systems.

Suitable candidates will have a track record in selling computer services, either processing or hardware, as well as an appreciation of micro-computers through to mainframe equipment.

Systems Engineers Sales Executives

to £18,000 Overseas

World-wide organisation, specialising in the development, support and marketing of IBM system software requires professional people for EUROPE and AUSTRALIA.

Systems Engineers must have experience in OS and/or DOS operating systems, whilst Sales people must have a track record in selling computer-related products. (4883)

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In return, we offer:

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TEL 01-439 3671

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In return you will be offered the opportunity to use your professional skills in an exciting environment with unlimited earning potential. In the first instance telephone Camberley (0276) 32898 (office hours) or Farnborough (0252) 516978 to 10 p.m.

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Near Camberley, Surrey

Analyst/Programmer Computer Services
MONTROSE

We are responsible for the UK manufacture of Glaxo pharmaceuticals and their sale in this country.

The company is engaged in the implementation of a large network of Hewlett Packard mini computers involving all company locations and based around the Company headquarters in London. There is a major development programme of advanced on-line systems being built around a distributed database predominantly in the production planning, inventory control and quality control areas.

We now require an Analyst/Programmer at our Montrose installation which presently operates an HP 3000 Series 33 computer.

This is an opportunity to contribute in a most exciting and rapidly growing environment, and candidates should already have substantial experience. Knowledge of Hewlett Packard Software would be an advantage although necessary training will be provided. The predominant programming language is COBOL.

In addition to an attractive starting salary our first class benefits package is what you would expect from one of the most progressive British companies.

Montrose is a thriving coastal market town within easy reach of Dundee and Aberdeen and surrounded by some of the most delightful scenery in the country – a good place to earn a living; an even better place to live.

Please write or telephone for an application form, quoting reference 165, to: Mr. M. Ryan, Personnel Department, Glaxo Operations UK Ltd., Cobden Street, Montrose DD10 8EB. Tel: (0674) Montrose 2606.

GLAXO OPERATIONS

LOOK

PROGRAMMERS

To £9K + benefits — **Sussex Coast**

All levels of IBM OS COBOL Programmers required for a new company. Excellent prospects now and in the future. Analysts (Systems and O. & M.), at all levels are also required, preferable with insurance systems knowledge.

£9K + benefits — **Kent**

IBM DOS COBOL Programmers who join this company, do so at a time of exciting growth and development. Excellent prospects.

£ negotiable + benefits — **Middlesex**

PDP Basic + 2 Programmer. It is expected that the right applicant will make an early move to Analyst/Programmer. Large communications network U.K. and Europe.

ANALYSTS

To £11½K — **Surrey**

Systems Analysts at all levels required for new site. Applicants should have a knowledge of insurance applications.

£ negotiable — **Kent**

In-depth knowledge of financial and/or production applications required for this large engineering group.

OPERATORS

IBM OS VSI – contract	North
Burroughs 1800 – contract	Various sites
DEC PDP – permanent	London
IBM 8300 DOS VSE – permanent	London

The above is just a selection of our current requirements. For a more complete list ring Loraine now on 01-434 2889

NAME:
ADDRESS: AGE:

TELEPHONE NUMBERS (used discreetly)
HOME: BUSINESS: EXT:
POSITION SOUGHT:
AREAS CONSIDERED: CONTRACT/PERMANENT
SALARY/FEE REQUIRED: AVAILABILITY:
EMPLOYMENT DURING LAST FIVE YEARS (current or most recent work first):

EMPLOYER	POSITION	MACHINES?	OPERATING SYSTEMS	LANGUAGES	APPLICATIONS

Please continue on separate sheet of paper if necessary, or send us your curriculum vitae. I understand that the above details will be treated in the strictest confidence, and no action will be taken without my consent.

Signed .... Date..................

METRO.

Freepost 39,
(no stamp required)
London W1E 6JZ.

COMPUTER STAFF LTD., 01-434 2889/01-439 9582 (4859)

LOTHIAN REGIONAL COUNCIL

DEPARTMENT OF EDUCATION
STEVENSON COLLEGE OF FURTHER EDUCATION

Computer Operator

– Department of Business and Computer Studies

The College equipment includes a 16 terminal ICL 2904/50, a batch terminal mini system and a number of micro systems. Preference will be given to the holders of SNC in Computer Operations/Data Preparation or equivalent qualification.

Salary on Scale £2238-£4923.

Application forms may be obtained from the Registrar, Stevenson College of Further Education, Bankhead Avenue, Sighthill, Edinburgh EH11 4DE. (4894)

LONDON BOROUGH OF BROMLEY

BOROUGH TREASURER'S DEPARTMENT

SENIOR COMPUTER OPERATOR

C1.2 £5073-£5493
+ 14% shift allowance
(Ref. B.827)

Applications are invited for this post which is responsible through a Shift Leader for the operation of Council's ICL 1903T 192K computer. The George 3 operating system is used to support in the region of fifty on-line terminals plus batch processing. The machine will be replaced early in 1982 with an ICL 2966 model using the CME operating environment in conjunction with VME/B.

Experience – a minimum of two years' experience is desirable together with knowledge of the George 3 or VME/B operating systems.

Application forms from Assistant Chief Executive (Head of Manpower Services), Town Hall, Bromley, Kent. Tel. 01-464 3333, Ext. 3318.

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CITY — **ANALYST PROGRAMMERS** — to £[illegible]

A large international banking concern in the City, using DEC PDP11 Computers is looking for Analyst/Programmers to supplement their existing teams. A minimum of 2-3 years' banking or financial experience is required, preferably under AIMS, however, strong BASIC + 2 experience under RSTS/E will also be considered. These posts carry an excellent company package, which includes the usual banking benefits as well as a yearly bonus and the opportunity for some overseas travel. Ref. [illegible]

SURREY — **ANALYSTS, PROGRAMMERS** — to £11,000

ICL COBOL Analysts and Programmers are required by an impressive insurance company in Surrey. Systems Analysts will be expected to have a minimum of 18 months' System Analysis in financial applications, preferably including some supervisory experience and will be able to command a substantial salary. Programmers with around two years' experience in a commercial environment and a working knowledge of [illegible] are also required. The usual insurance company benefits, including subsidised mortgage facilities and some relocation assistance are also offered, making the positions offered very worthwhile. Ref. [illegible]

LONDON — **PROGRAMMERS** — £[illegible]

A major manufacturing company in North London requires DEC PDP11 Programmers. If you have a minimum of two years' MACRO II experience under RSX11M or RT11, this could be for you. Preference will be shown to programmers who have gained experience in industrial application areas, or who have a knowledge of FORTRAN or RT11/2 under RSX11M. The company benefits package is very good, including five weeks' holiday in the first year, a profit sharing scheme, subsidised staff canteen, and the possibility of relocation assistance for the right applicants. Ref. [illegible]

CITY — **PROGRAMMERS** — To £[illegible]

An opportunity has arisen for young programmers with a minimum of 6-12 months' experience in BASIC + 2 under RSTS/E to move to a large publishing organisation in the City. You will be helping to develop sales accounting Systems and working with ledger packages, Word Processing and financial modelling. The opportunity to learn Systems Programming also exists. Benefits include season ticket loan, membership to BUPA, and Luncheon Vouchers. Ref. [illegible]

W. SUSSEX — **ANALYST PROGRAMMER** — To £[illegible]

Our Client is an internationally known manufacturing company based in Sussex. They are looking for a SENIOR ANALYST PROGRAMMER to complement a small team where the accent is mainly on developing MANUFACTURING SYSTEMS, such as BILL OF MATERIALS and MATERIAL REQUIREMENTS PLANNING. Experience with COBOL or RPG II is essential together with experience in the relevant application areas. An excellent range of benefits is offered together with the opportunity for some EUROPEAN TRAVEL. Ref. [illegible]

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Further details and application forms are obtainable from the Regional Personnel Officer, East Anglian RHA, Union Lane, Cambridge CB4 1RF (Tel: Cambridge 61212, Ext. 325)

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Applications to Computer Weekly, Box 1132. (4881)

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Box Number ....

c/o Computer Weekly
Quadrant House
The Quadrant
Sutton, Surrey SM2 5AS

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Starting salary will depend on qualifications and experience but will be within the range of £8,668 to £10,653. The benefits are those normally associated with a large progressive organisation.

Please write, quoting ref. EP/764001/CW, giving full details of age, qualifications and experience, to: Senior Personnel Officer (London), British Gas, 59 Bryanston Street, London W1A 2AZ.

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Written applications in the form of C.V.'s or requests for application forms to Dr. J. A. G. Thomas, IPC Electrical-Electronic Press, Quadrant House, The Quadrant, Room 311, Sutton, Surrey SM2 5AS. Telephone No.: 01-661 3151. (4897)

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A Project Leader is sought by this famous International company. The applicant will have worked for 3-4 years as an Analyst Programmer using IBM COBOL and will ideally have CICS and DL/1 experience. He/she will also have the ability to lead a major project. The company have recently installed a 4341 under DOS/VSE and will be converting to OS shortly. There are generous additional benefits including free meals and Non-CPS. CW11/7 Tricia

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MIDLANDS RECRUITMENT ADVERTISING FEATURE

A lower cost of living — and scope for development

THE Midlands is certainly not one of the UK's glamour areas, but there are good reasons for living and working there. Vic Sheret has been interviewing four Midlandophiles to find out why...

MS G. SHERIDAN of Sheridan Communications.

Q. What do you consider to be the benefits of working and living in the Midlands?

A. Obviously, the lower cost of living is one of the main advantages, especially when buying a house and comparing prices with those in the South. There is scope for small businesses to expand, and generally a good environment for development. Being a central location, there is the opportunity to travel freely to most parts of Britain. It is also notable that people in the Midlands have a very favourable attitude towards businesswomen and are prepared to accept any person capable of doing the work well, irrespective of sex.

Q. How is the recession affecting the Midlands?

A. There is no disputing that it is very bad, but there are opportunities in many areas within the computer industry, especially contract work. In general, companies are looking hard at their finances and they have stopped investing and recruiting. Where this means there are fewer jobs available in the Midlands, the quality of the vacancies on offer remains very high. Summarising the situation in the Midlands, it is certainly no worse than elsewhere in the country.

Q. It is the International Year of the Disabled. Do you feel there are sufficient facilities for the disabled within the computer industry in the Midlands?

A. Nearly all companies are conscious of the fact that disabled people have much to offer, particularly in programming. There are many special aids available to assist the disabled, and again, we can highlight the programming side. However, companies are aware of the need to do more for the disabled, but there are many obstacles that have yet to be overcome.

□ □ □

MR S. HEYWOOD of Coventry City Council.

Q. How do you see the quality of staff in the Midlands?

A. At present, it appears difficult for most companies to obtain quality. The vacancies advertised for the better qualified DP staff are much harder to fill, whereas positions for trainees would attract a much better response.

Q. What opportunities are available for people trained on a TOPS course?

A. The only hope I can offer to anyone having completed a TOPS course is that they approach a company willing to offer them a position as a trainee. Unfortunately, few companies are prepared to incur the expense of training inexperienced people and then lose them to larger companies on completion of training.

Q. What opportunity is there for advancement in the Midlands?

A. At present, there is very little opportunity for advancement because people are reluctant to change jobs due to the employment situations.

□ □ □

MR B. STEVENS of James Baker Associates.

Q. How do salaries compare in the Midlands in relation to the South?

A. Generally, salaries are marginally lower than in the South. One finds that people moving from the South are prepared to accept a similar position for the same salary or even less, because of the lower cost of living in the Midlands.

Q. How do you see the standard of equipment at present in use in the Midlands?

A. We are most certainly not behind the times, and in some instances are ahead of the times, especially on sites and technology. Again there is very little difference when comparing the Midlands to any other area, although one does find a different emphasis in the Midlands and North where they tend to concentrate on manufacturing systems with less regard to the financial and banking aspects.

Q. To what extent are formal qualifications taken into consideration when assessing applicants for jobs?

A. There is an increasing emphasis on degree and HND/BNC qualifications, particularly for the lower grade positions but it is true to say that experience is still the overriding factor.

□ □ □

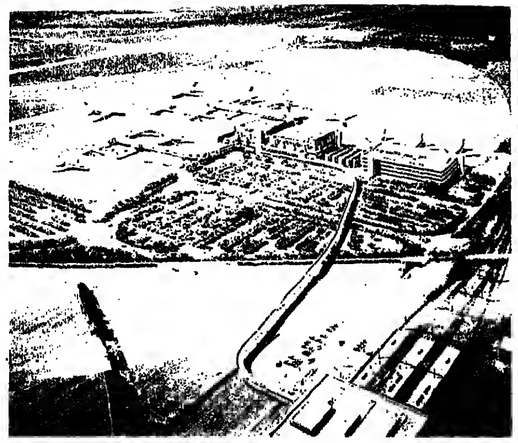
MR R. TOWNS of Austin Knight.

Q. It is usual for companies to offer fringe benefits, but in reality what are these fringe benefits?

A. Most companies offer relocation assistance in approved cases and are normally helpful with any legal expenses. Many will also give consideration in out-of-pocket expenses. It is usual to provide a car, but this depends on the level of the position, and the company concerned. The benefits offered by companies in the Midlands are equal to any in the country.

Q. Within the computer industry there are a variety of vacancies. What type of vacancy is predominantly available?

A. It would appear most companies have vacancies for programmers on the lower end of the scale and systems analysts seems to be a major problem area.



A much-needed boost to the economic life of the West Midlands should be provided when Birmingham's new airport opens in 1984. The new terminal, pictured above, will eventually cater for nearly 3 million passengers a year and will have a magnetic levitation rail link between it and the Birmingham International railway station and nearby National Exhibition Centre.

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As the Nottingham-based company is committed to introducing new computer-controlled products, this requires the recruitment of certain skills not available from its existing staff.

Currently there are still a number of openings in these areas. And over the past two years the company has increased the number of electronic engineering graduates entering the business.

What does Plessey consider are the benefits to be enjoyed by employees of working in the East Midlands?

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Application forms and further particulars may be obtained from the Staff Officer (quoting Ref: 482/102), University of Aston in Birmingham, Gosta Green, Birmingham B4 7ET. (Tel: 021-359 3611, Ext. 201). Closing date for the receipt of applications is 14th April, 1981. (4852)

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Salary scale:
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Project Leader At least 5 years' experience specialising in production control manufacturing systems, involves customer contact at all levels. Area Leicestershire Salary to £8,500 Ref. RA 342

Systems Analyst At least 3 years' experience using Large ICL Mainframe, knowledge of teleimmulation and distributed processing. Area South Birmingham Salary £10,500 Ref. SA 309

Senior Systems Analyst At least 5 years in DP experience in sales order processing stock control systems. On line environment knowledge of Cobol. Area Nr. Solihull Salary to £10,000 Ref. SA 299

Systems Analyst At least 4 years' DP experience including IBM, IMS and Database. Area Coventry Salary to £9,000 Ref. 310

Systems Analyst At least 1 year of commercial systems. Area Derbyshire Salary to £7,500 Ref. SA 310

Senior Systems Analyst Around 5 years' commercial experience, knowledge of production control an advantage. Area South Warwickshire Salary to £8,000 Ref. SA 320

Analyst Programmer At least 4 years' commercial systems ICL Hardware preferred. Area Nottingham Salary c. £6,500 Ref. 328

Chief Programmer At least 5 years in DP Hardware experience, ICL 1900 or 2900, languages Cobol FL78. Area Birmingham Salary c. £7,750 Ref. P638

Analyst Programmer At least 2 years' Cobol with distributed processing experience. Area Birmingham Salary to £7,500 Ref. SA 306

Senior Software Programmer At least 4 years working in a large IBM Mainframe environment, knowledge of MVS & JES3 essential. Area Leicestershire Salary to £9,000 Ref. P6471

Database Analyst Programmer At least 3 years' Cobol with Database management systems experience. Area Coventry Salary c. £7,500 Ref. SA 259

Software Support Analyst Programmer At least 3 years' Software experience using on line and batch systems. Area Coventry Salary c. £7,500 Ref. SA 259/1

Programmer At least 18 months' Cobol on line Database environment. Area Lincolnshire Salary to £7,000 Ref. P564

Senior Operators At least 2 years operating large IBM 370 Mainframe under DS MVS, JES2, JCL and IBM utilities. Area Worcestershire Salaries to £8,300 Ref. 0212

If none of these jobs suit you, we have many more that may.

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ComputerWeekly to pass 100,000 circulation

FIRST SIX-FIGURE CIRCULATION IN COMPUTER JOURNALS

Challenging the climate of recession more dramatically than any comparable journal, Computer Weekly announces a major circulation increase – to 100,000 – breaking the six-figure barrier for the first time in the history of U.K. computer journals.

More important than the overall circulation increase is the increase in each major job category to a level where Computer Weekly now leads all other journals in the field.

The new circulation level will be substantiated in the Audit Bureau of Circulations (ABC) returns for the six months period from January-June 1981.

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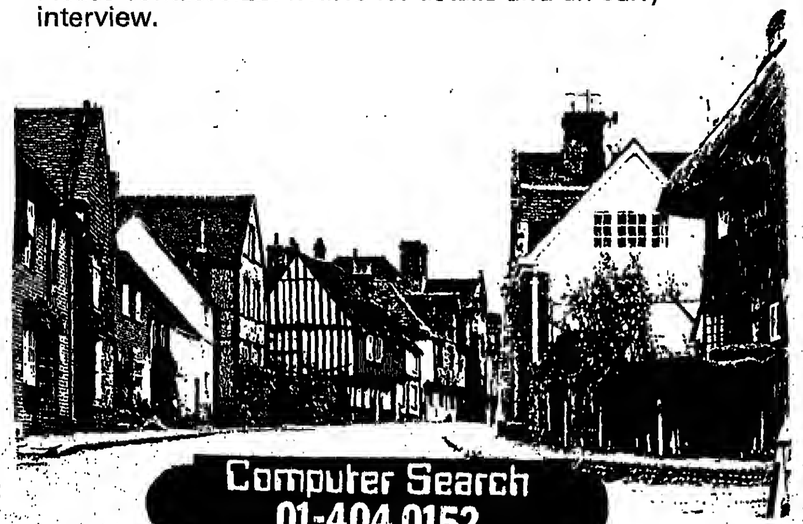

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A leading concern based in Central London currently require an individual with flair and initiative to advise on and implement a new organisational structure within their expanding computer installation. Currently based on large IBM 370 hardware, a conversion to IBM 4341's with an IMS-Database facility is planned for mid '81. It is necessary for candidates to have already gained management experience in a customer orientated environment, possess excellent inter-personnel communication skills and have had exposure to database usage, preferably IMS. This position provides an unequalled career opportunity to be involved in an international organisation with worldwide commitments. A comprehensive benefit package, which includes mortgage subsidy, is offered together with an excellent negotiable salary.

IBM SHIFT LEADER
c £9,700+

A progressive financial concern situated in Central London require a highly motivated individual to supervise the efficient running of a shift. The company rely heavily on their computer facilities to provide up-to-date information regarding worldwide inter-bank transactions and are therefore committed to keeping abreast of technical developments and maintaining a highly professional computer team.
Candidates must have a minimum of 4 years' IBM experience with a thorough knowledge of DOS/VS, POWER/VS, associated utilities and JCL. CICS and VTAM. In addition to the excellent salary, the company offer mortgage subsidy and life assurance. This position is worked on a two-shift system covering 07.30-22.30, Monday to Friday.
For more information on the above and other IBM vacancies – technical and management – please ring JANET WARREN. All enquiries are treated confidentially.
KEY OPERATIONS ASSISTANCE LIMITED
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datascene

PROJECT LEADER
ICL 2904

CITY **to £10,000**

Our clients are a leading member of the London commodity market who seek an enthusiastic project leader for their ICL installation.

Candidates, who will lead a small team, should be aged about 30, have a programming and analysis background and have successfully completed 1 or 2 projects, from design through to implementation.

Some U.K. travel is involved and the accent is on enthusiasm.

In addition to an excellent salary, the company offers a non-contributory pension scheme, and free BUPA. D.5111

PROGRAMMERS
IBM 370

LONDON **c. £8,000**

As a result of continued expansion, a very successful trading company on the fringe of the city urgently require still more PL1 programmers.

Candidates should have a minimum of 2 years' PL1 programming, which has been gained in a team environment with involvement in at least one medium system. IBM Cobol programmers may also apply.

Apart from the salary the company offers good chances for promotion and numerous benefits, befitting an organisation of their reputation. D.8047

JNR. ANALYST/PROGRAMMERS
IBM 4341

LONDON **to c. £8,500**

Openings exist within a leading oil company for junior analyst/programmers who can show a successful career path within the computer industry together with a good educational record.

Their requirement for at least one year's commercial COBOL programming on IBM 370 or 4300 machinery together with at least good 'A' levels or, preferably, a degree.

In return they offer a definite career structure with ample training facilities, and the very best in company benefits and working conditions. D.8027

PROGRAMMER/ANALYST
RPG II

LONDON, CITY **To £10,000**

An excellent opportunity has arisen for a Programmer/analyst who would like more involvement with systems design. The company you will be working for are totally involved in banking and are American owned.

Ideally you should have between 2-4 years' RPGII Programming experience and a good theoretical knowledge of system design. A good knowledge of banking applications is also required.

The company offer an excellent career path coupled with regular training courses and benefits including subsidised restaurant, sports and social club and mortgage facilities at well below building society rates. M.5137

RPG II PROGRAMMERS

LONDON, H. COUNTIES **To £10,000**

Datascene have recently taken a considerable number of vacancies for RPG II Programmers in London and the Home Counties.

The range of industries within the client database are wide ranging but include Petro-chemical, Banking, Insurance, Engineering and Software houses.

Ideally you should have at least one year's experience but preferably 18 months' together with a good standard of education.

Progression within the various departments is good as all companies offer career progression. M.GEN

BASIC, BASIC + PROGRAMMERS

LONDON/CITY **£7,500-£9,500**

We are in contract with a number of Banks who are seeking programmers with upwards of eighteen months' experience in business BASIC, BASIC +, BASIC +2, or AIMS. Successful applicants can expect to be working in a batch and real-time environment on applications such as foreign exchange and eurobonds. Opportunities for career progression are excellent and the employment packages offered include interest free season ticket loans, productivity/bonus schemes, staff restaurant/luncheon vouchers and low interest mortgage facilities. R.GEN 2

ANALYST/PROGRAMMERS & PROGRAMMERS

S.W. LONDON **£7,500-£10,500**

A leading manufacturing company require an experienced Senior Analyst/Programmer, one Analyst Programmer and one Programmer to complement their existing team. Experience required ranges from 2/5 years' of on-line working with COBOL. A sound knowledge of commercial application and project management will be advantageous to those applicants applying for the senior positions offered. The company benefits include five weeks' holiday, product discount, subsidised canteen and Pension Scheme after one year's employment. R.8013

HEWLETT PACKARD 3000 COBOL

LONDON/HOME COUNTIES **£7,500-£9,000**

We have several Hewlett Packard clients with current vacancies for experienced Analysts, Analyst Programmers and Programmers. Experience required is from 1½ years' upwards on this equipment with a good knowledge of commercial or business applications and a good standard of education. Progression within the various companies is excellent as all offer solid career growth. A wide range of company benefits are offered and represent fine opportunities for suitably qualified applicants. R.GEN 1

The above vacancies are only a small selection from those currently on our files and we are always delighted to talk to experienced systems and programming staff wishing to further their careers. (4728)

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01-439 7871
24 hour answer phone

Recruitment LOGISTIX consultants In informatics

Communications Software
Southern Germany: Salary to £15K

Communications Engineers from Programmer/Analyst to Team Leader level are urgently required by one of Europe's leading suppliers of communications equipment. Software development teams, based in their R & D Headquarters, are currently engaged in the design and construction of an advanced telephony system based on Intel 8086 microprocessors. All applicants must possess at least two years' real-time software development experience on any leading mini or micro-computer and be fluent in one high-level problem orientated language such as PASCAL, COBAL or RTL/2. For the more senior positions it is also necessary to be familiar with an Assembler language and be capable of supervising a small team of Programmers and Analysts. Initial interviews will be held in London and those who are successful will be invited to the Company's premises prior to offers of employment being made. Ref. L/12/A.

Technical Consultants
Central London: Salaries to £15K

Outstanding opportunities have arisen for candidates to join a long-established and successful computer consultancy based in Central London. You should be aged 28-34 years and educated to at least degree level. It is essential that all applicants possess good personal communication skills and demonstrate the ability to solve problems both quickly and professionally. Of particular interest will be candidates who have experience in Telecommunications, Distributed Processing or Data Base Management. Working as a member of a small team, you will not only be involved in the implementation of systems, but also in corporate strategy study, operational research and marketing. Ref. L/12/B.

Technical & Commercial S/W
E.E.C.: Pkg. to £16K

Technical and Commercial Software Specialists are urgently sought by a leading Dutch Systems and Software House. Applicants with a commercial background will be required to have at least 3 years' programming experience in Assembler, Basic or PL/I on small business interactive systems. Of special interest will be candidates with exposure to established Structured Programming techniques. Technically-orientated applicants will be expected to possess expertise in Communications Networks, Message Switching or Process Control Systems development. Ancillary benefits are excellent and successful applicants will be offered full relocation assistance. Ref. L/12/C.

Commercial Programmers
Berks/Surrey: Salary to £8K

Commercial Applications Programmers with at least 2 years' experience are urgently sought by a small, profitable Systems and Software House. It is essential that all applicants are familiar with at least one high-level language, preferably Fortran, but those fluent in Cobol or other commercially orientated languages are encouraged to apply. Our clients have a stated preference for candidates who have worked on DEC's PDP11 range but particular hardware experience is not a limiting factor. These positions represent a rare opportunity for successful applicants to enhance their technical skills whilst working in an attractive rural setting. Ref. L/12/D.

Snr. Systems Analysts
City: Salary to £12K

As a result of recently upgrading its installation, a leading City-based company has a number of vacancies for Senior Systems Analysts. Respondents will be expected to have participated in the development of at least one medium to large computer system, preferably utilising I B M compatible Database and Teleprocessing Software. Whilst not essential, it is desirable the candidates to have experience of cost benefit analysis in a commercial/business environment. Successful applicants will be responsible for the supervision of a team of up to 5 Analysts and the ability to communicate at all levels as well as motivate staff are therefore prime requirements. Ref. L/12/E.

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01-373 3062 LOGISTIX Telex: 28800 (4823)

D.P. Consultants

Minicomputer Technology

Bushey, Herts. **£ high negotiable**

DP Consultants, this is your opportunity to be involved at the heart of our exciting plan to link the various Rank Xerox companies throughout Europe by means of a network of distributed processing systems. We are utilising Honeywell level 6 and DEC minicomputers to communicate with the large IBM mainframes in three International Data Centres at Bushey, Paris and Dusseldorf.

The Minicomputer Technology Groups responsibility includes:

- Providing a consultancy service on the suitability of minicomputers for particular applications.
- Evaluation and selection of hardware and software.
- Support to users during and post implementation of minicomputer systems.
- Development, distribution and support of specialised communications interface software.

Applicants should have at least 4 years relevant experience as a minicomputer Support Specialist. Opportunities exist at both technical and supervisory level.

The salary and benefits package is excellent and includes company pension scheme, free life assurance, free BUPA, four weeks holiday – rising to five, generous relocation package and a subsidised staff restaurant.

Please write with career details or telephone for an application form to Ruth Kalinowicz, Rank Xerox Ltd., Phoenix House, Kemp Place, Bushey, Herts. Tel: 01-950 4030. Ext. 286.

RANK XEROX

IMS & Systems Support Specialists

Bushey, Herts — **Salary £High-negotiable**

Rank Xerox provides centralised data processing through three International Data Centres located at Bushey, Paris and Dusseldorf. These act as a "service bureaux" to the various Rank Xerox companies throughout Europe by providing them with large IBM-mainframe computing facilities running MVS and JES3.

Our Customer Support Group, based at Bushey, provides an extensive range of technical services and support activities to all our users who are located in more than twenty sites in 12 European countries.

Due to continued expansion we can offer a number of challenging and interesting positions to experienced DP professionals wishing to utilize and extend their skills in a support environment.

Interactive Systems Support

This group is responsible for all systems programming work relating to database and data communications software. We are seeking individuals who have:

- sound knowledge of IMS DB/DC software and/or
- several years experience of developing IMS DB/DC applications.

Successful applicants will join the existing team and be expected to make a major contribution to the implementation of IMS DB/DC throughout Rank Xerox.

Batch Systems Support

This group is responsible for evaluating commercial utility software packages, providing technical support services to user sites and assisting users in planning and using the data security facilities (RACF). We are seeking individuals who have:

- a sound knowledge of using Assembler under an IBM/OS operating system preferably MVS
- some experience in IBM/OS operating system software
- knowledge of RACF and how it works (not essential)
- experience of using/installing vendor software
- some COBOL/high-level language experience.

Successful applicants will be expected to be self-motivating, able to work with a minimum of supervision and to make a significant contribution to the work of the group.

Applicants, should have a minimum of 4 years' DP experience of which 2 years should have been in an IBM environment.

The salary and benefits package is excellent and includes company pension scheme, free life insurance, free BUPA, four weeks holiday – rising to five, generous relocation package and subsidised staff restaurant.

Please write with career details or telephone for further information and an application form to Ruth Kalinowicz, Rank Xerox Ltd., Phoenix House, Kemp Place, Bushey, Herts. Tel: 01-950 4030 Ext. 286.

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Ideally you will portray the following levels of experience and skill:

1. A sound D.P. background having developed your career from Programming through Systems Analysis and Design and currently occupying a responsible management position.
2. You will have experience of working with sophisticated On-line/Real Time systems preferably related to financially based applications.
3. Familiarity with more than one level of computer mainframe, with particular experience based upon PDP 1170 hardware will prove highly attractive.
4. We would expect you to be experienced in managing D.P. personnel at all levels and to portray the ability to communicate well with user personnel and departments.

THIS IS AN OUTSTANDING OPPORTUNITY FOR A PERSON TO JOIN A FORWARD-LOOKING AND DEVELOPING COMPANY INTERESTED IN TAKING ADVANTAGE OF NEW D.P. TECHNOLOGY AND EXPANDING ITS D.P. FACILITIES FOR THE BENEFIT OF ITS USER DEPARTMENTS. OUR CLIENTS WISH TO MAKE THIS NEW APPOINTMENT BY THE END OF MARCH AND THEREFORE RING US (24-HOUR ANSWERING SERVICE) OR SEND YOUR C.V. NOW WITH A VIEW TO ARRANGING AN EARLY INTERVIEW.

REF: CW/8/81

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This will involve responsibility for the marketing of a very competitive and technologically advanced range of micro-computer based systems and intelligent terminals through a network of European distributors. The job is UK based and will be substantially devoted to direct selling activity, but enhancement of the sales operation is envisaged as revenues expand.

We are seeking accomplished sales people with at least three years' experience of selling computer hardware at the OEM, distributor or end user level. All applicants must clearly demonstrate an ability to negotiate at the highest possible level within a variety of international situations. Existing experience of selling within Europe and the ability to speak French and/or German will be advantageous but not essential.

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Please submit complete career details to Alan Williams quoting reference CAN/103.

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You will be an experienced Supervisor with a strong DOS/VS (E) background in an On-line environment. If you have worked with remote communications this would be an advantage.

Senior Programmer c. £8,500

We are looking for PL/1 Shadow II experience for our IBM 4331 with the opportunity to work on the System 38 later. All necessary training will be given.

Analyst/Programmer c. £8,000

Some systems analysis experience is required with a relevant programming background.

For further details please contact Mrs. Sharon Millen, Personnel Department, CPC (United Kingdom) Limited, Claygate House, Esher, Surrey. Telephone: Esher 62161

(4758)

CPC/United Kingdom

SALES BIT

It couldn't happen in DP–could it?

OUR administrative office decided it needed a new photocopier – nothing fancy, you understand, just a desk-top job that could handle plain paper . . .

We had seen several Press advertisements telling us how many different companies had the best photocopier in the world, and decided to call a few of them to see what they had to offer.

However, being a sales orientated organisation, with strong altruistic feelings towards salesmen, we decided to make it easy for them, stating the type of copier we wanted, the number of copies we were likely to need within a given period, the type of printing method we preferred, the sort of money we were prepared to pay, where we were located, etc.

Then we waited for all the friendly neighbourhood salesmen to come rushing to our door.

After a week, we were beginning to think no one was interested in our business. But then one of them made telephone contact and said he would like to come and demonstrate a machine, making an appointment for 11 am the following day.

At 10.55 am we had a phone call to say he would be a little late. We thought it best not to get involved in any of our work, if it meant having to leave off again as soon as he arrived.

Eventually he arrived, an hour late, asking if we had someone available to help him carry a photocopier up the stairs, as his assistant had failed to show up altogether. We were not amused.

As it happened, there was no one of sufficient physical stature to give him the lift he required. He wasn't very pleased and protested that no one had told him we were located on the first floor, and that there was no lift.

Consequently he then disappeared to solicit assistance from some innocent by-passer.

Eventually, the device was manhandled up the stairs, dumped in the middle of the accountant's desk, much to his displeasure, and was eventually persuaded to work. To its credit, it produced rather good copies.

So then we decided to ask the price, and were taken aback to find it was a 125% more expensive than the maximum we had previously said we were prepared to pay. And our obvious reaction was to state our total lack of interest in buying his machine.

To our surprise he didn't even protest, but simply prepared to leave.

"Hang on a minute," we said, "you're forgetting your machine."

"Oh yes," he said, "will it be all right if I come and pick it up later?"

That seemed reasonable, bearing in mind the struggle he had in getting it into the office in the first place. But just as a precaution we asked when he could collect it.

"I am not sure," he said, "I'll let you know," and despite our protestations, left.

A week later, by which time we thought he had forgotten it, he phoned to say he would have to leave it for a further fortnight. You see, he was going to America on a free holiday paid for by his company – because he was their top salesman.

Meanwhile, back with the other photocopier manufacturers, and some three weeks later we have seen only two other salesmen from the six companies we contacted.

And the market leader has still not got round to acknowledging our letter and phone call.

I only tell this true story for academic interest. I mean to say, this sort of thing could never happen in the computer industry, could it?

Alan Williams

COURSES

■ SENIOR executives with little or no practical computer experience may benefit from a series of five-day residential courses, organised by Counting House Computer Systems in association with the European Manpower Advisory Service Group. Each course, to be held at Counting House's training school in Bury St Edmunds, will demonstrate how the use of computing techniques can improve effective business management. Courses will be held in June, September and December. Fee, including board, is £460 + VAT. Details from Hugh Holland, Counting House Computer Systems, Fornham House, Fornham St Martin, Bury St Edmunds, Suffolk. Tel: (0284) 68921.

■ INSTRUCTION on a variety of data processing skills is given in a programme of short courses organised by Control Data. On May 11-12, the Electronic Mail – Technology Awareness seminar is for administration managers and planners, office managers and computer and information systems professionals. The aim is to dispel the electronic mail mystique and provide background knowledge in the field of information transmission. The course fee is £310 + VAT and it takes place at the Clive Hotel, London NW3.

For details on these and other spring courses, telephone Hilary Colyer at Control Data House on 01-240 3400.

PUZZLE ANSWER

A SPEEDY mental solution can be arrived at by searching for a square of the form n + 19 (where n is my son's teen age now). Only 36 fits the bill so n is 17, and 9 seems the likely answer to "several years", to give a cube of 8 at that time. Further brainwork soon brings forth 45 as my age, to produce the cube 45 + 19 = 64, and the square 45 - 9 = 36.

Complete the coupon end return to Effectia Gravis, National House, 66 Werdour Street, London W1V 3HP, for your next PERMANENT or CONTRACT job.

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DATA PROCESSING OPPORTUNITIES

USA

special editorial feature-MAY 28 issue

COMPUTER WEEKLY — Britain's largest circulated computer publication — will publish a special editorial feature in the May 28 issue designed to outline the career opportunities for fully qualified and experienced data processing personnel in the United States of America.

The current international shortage of data processing staff is likely to remain a problem for the foreseeable future becoming increasingly acute with the growth of computer installations. The prime objective of this feature will be to create a greater awareness amongst readers of the scope and job opportunities available in the USA.

COMPUTER WEEKLY has a circulation of 100,000 — the largest of any comparable journal in the U.K. Equally important, readership dominates all the major job categories in computing to a level where the newspaper leads all other journals in the field particularly amongst DP Managers, Systems Analysts, Programmers and Operations staff.

If you are currently looking for permanent or contract staff why not take advantage of this special feature and advertise your requirements to the U.K. market place through COMPUTER WEEKLY. A special section titled "Career opportunities in the USA" will be included in the issue drawing attention to your announcement.

Advertisements can be accepted up until May 20 although advanced space reservations are advisable. Rates are based on £19 per single column centimetre. COMPUTER WEEKLY is printed litho process therefore no blocks are required. There are seven columns to each page measuring 39cms long. 1 col width = 39mm 2 = 82mm 3 = 125mm 4 = 168mm 5 = 211mm 6 = 254mm 7 = 296mm.

Should you require any further details or would like to see a copy of COMPUTER WEEKLY contact our recruitment advertisement division today.

ComputerWeekly

the newspaper computer people rely on.

Quadrant House, The Quadrant, Sutton, Surrey SM2 5AS. Tel: 01-661 0121

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FOR FURTHER DETAILS OF THIS WEEKLY FEATURE CONTACT OWEN KELLY 061-872 8861

TEAM LEADER
ESSEX to £11K
You are a senior programmer who has worked in a banking or insurance environment on an IBM mainframe. You have supervisory ability, know PL/1, Assembler and COBOL, and are experienced in Database and Teleprocessing techniques.
(NW1654)

SNR PROG.
CITY £10K
Our clients are seeking a senior prog. with 4 years' COBOL, some of which should have been spent in an IBM environment — Mortgage subsidy — opportunity to learn CICS & IBM Methology.
(PK1645)

SYSTEMS PROG.
SUSSEX to £9K
Attractive South coast location for DOS/VS systems prog. on IBM 4331. Engineering Co. Design, program and maintain software.
(NW1622)

PROG/ ANALYST
WEST LONDON to £9,250
You are a COBOL programmer in an IBM environment. You have written your own specs or have worked closely with an analyst. You want to gain CICS and DL/1 experience in a developing department with great fringe benefits.
(NW1595)

BRANCH MANAGER
CITY c £20K+car
You have the ability to lead and motivate sales managers and representatives. You have good recruitment skills. You understand in-depth bespoke software applications in COBOL. You will have worked for a mfr., s'ware house or turnkey systems house, and will have a successful sales record. In fact, you're quite a person.
(NW1582)

TEAM LEADER
BUCKS £10K
Preferably at laast 5 years' IBM experience. In-depth knowledge of IBM COBOL, and DOS, CICS/ASSEMBLER experience an asset. Supervision and training of programmers.
(JA1659)

PL/1
CITY to £11.5K
4 years' prog-analysis experience an asset — commercial applications — large IBM mainframe utilising TP — Excellent prospects and training.
(PK1660)

SALES
W. COUNTRY £11K+car
3 years' selling, cash registers or related point of sales systems to sell to retail trade. Based in Bristol or Exeter. Full product training given.
(JA1662)

ANAL/PROG.
NORTH HERTS £10K
To work on Mini/Micro based systems — any high level language and some analysis. Wide career progression limited only by your ability.
(PK1636)

SNR ANALYST
HERTS to £13.7K
Prestigious Hertfordshire installation require senior analyst with 2 years' plus experience. Data Base and/or Point of Sale — Ring now for early interview.
(PK1248)

SYSTEMS ANALYST
HANTS £11K
Our client seeks people with comms. experience working on insurance/financial applications. Opportunity for extensive travel both home and abroad. Total peokage offered commensurate with leading insurance financial house — relocation offered for suitable applicants.
(JA1616)

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